QUÉBEC'S FOREST RESOURCES AND INDUSTRY

STATISTICAL INFORMATION
1985 EDITION

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Québec's Forest Resources and Industry

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* M.E.R.: Ministère de l'Énergie et des Ressources

1 Geographical Description of Québec's Forests

1.1 Ecological Zones

Area and Location of Québec's Ecological Zones

According to the border set in 1927, which is not definitive, Québec has an area of 1 667 926 km², Labrador excluded.

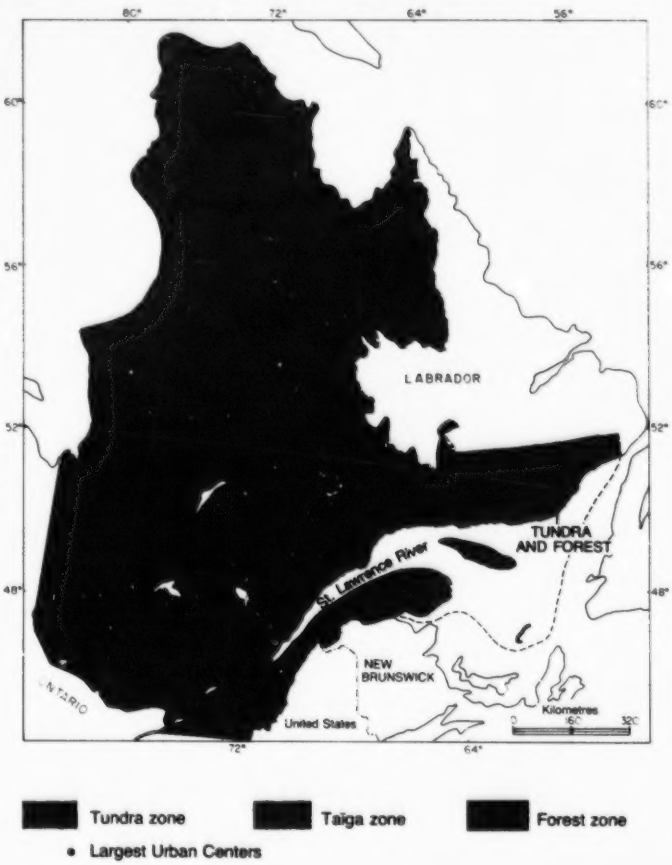
The St. Lawrence River, the Gulf of St. Lawrence up to the limit of equidistance from both shores, and the indentations along James Bay, Hudson Bay, Hudson Strait, and along Ungava Bay, cover 152 693 km², or 9% of Québec's area.

Québec's land mass is divided into three main ecological zones:

- the TUNDRA, the most northerly zone, is void of trees and consists of swamps and rocky outcrops on which moss, lichens and bushes grow. It has an area of 208 741 km², or 12% of Québec's area;
- the middle zone, called TAÏGA, extends to about the 52nd parallel; it is sparsely wooded and has no commercial potential. It has an area of 527 236 km², or 32% of Québec's total area;
- the most southerly zone, the FOREST, includes all productive forests; it covers the rest of Québec (779 256 km²), or 47% of its area.

The forest inventory established for management purposes is limited to the M.E.R.'s nine administrative regions. It covers almost the entire Forest zone, including a small strip of Taïga lying between Havre-Saint-Pierre and Blanc-Sablon along the St. Lawrence, and has an area of 764 279 km², or 46% of Québec's area.

Québec's Ecological Zones



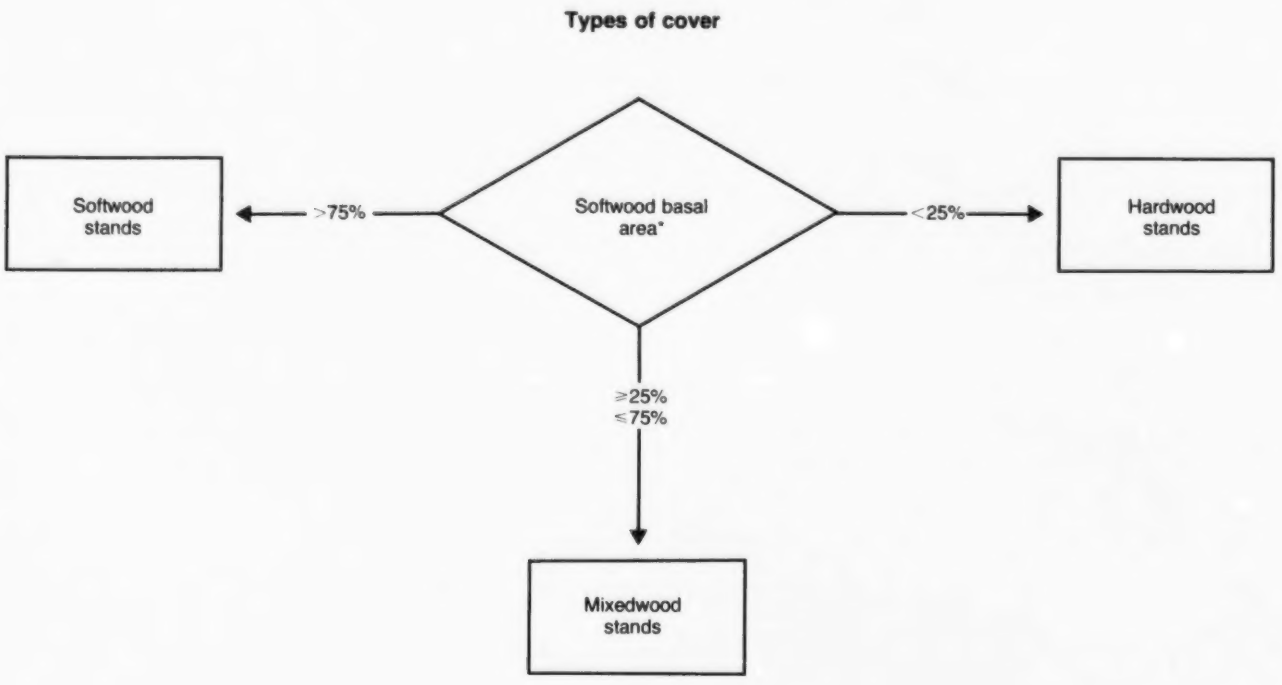
N.B.: The ecological Forest zone and the Commercial forest region, which encompasses all of the M.E.R.'s administrative regions, are two different entities.

1 Geographical Description of Québec's Forests

1.2 Ecological Sub-Zones and Climax Communities in the Forest Zone

Definitions

The ecological Forest zone is subdivided into the hardwood, mixedwood and softwood sub-zones, according to the nature and **type of cover** as well as the basal area* occupied by softwood and hardwood species. Various **climax communities** are associated with each sub-zone; they group together the areas which have the same species or groups of species.



Climax community

The culminating stage in plant succession for a given environment, the vegetation being conceived as having reached a highly stable condition, is called a climax community.

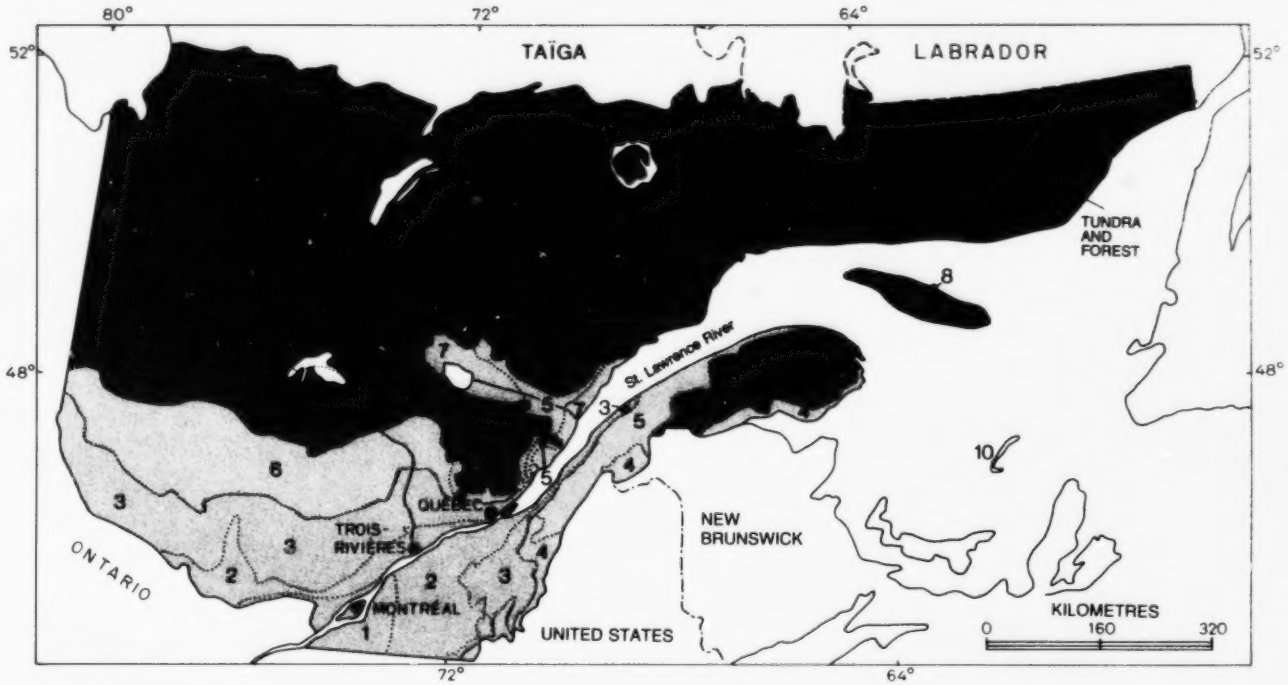
Hardwood forests include three climax communities in which sugar maples are predominant over average sites. Mixedwood forests comprise four of them where balsam fir, yellow birch and sugar maple are the main climax species. In softwood forests, five climax communities are present with black spruce and balsam fir as dominant species.

* Basal area: the area actually occupied by all the stems of a stand (measured on the bark, at 1,30 m above the ground).

1 Geographical Description of Québec's Forests

1.2 Ecological Sub-Zones and Climax Communities in the Forest Zone (continued)

Ecological Sub-Zones and Climax Communities in the Forest Zone



Ecological Sub-Zones

HARDWOOD FOREST

Corresponding climax communities

(1) Sugar maple — hickory forest and sugar maple — basswood forest
(2) Sugar maple — basswood forest and sugar maple — yellow birch forest
(3) Sugar maple — yellow birch forest

MIXEDWOOD FOREST

Corresponding climax communities

(4) Sugar maple — yellow birch forest and yellow birch — balsam fir forest
(5) Balsam fir — yellow birch forest
(6) Yellow birch — balsam fir forest
(7) Balsam fir, white birch and red maple forest

SOFTWOOD FOREST

Corresponding climax communities

(8) Balsam fir — white birch forest
(9) Balsam fir and black or white spruce forest
(10) Balsam fir — white spruce forest
(11) Black spruce and moss forest
(12) Black spruce, balsam fir and moss forest
(13) Tundra

1 Geographical Description of Québec's Forests

1.3 Administrative Boundaries of the M.E.R.

Definitions

Commercial Forest Region
This term is used to designate the overall territory which the M.E.R. has subdivided for management purposes.

Administrative Regions and Administrative Units
These are the administrative subdivisions which are determined by the M.E.R. and benefit from a regional administration. There are nine administrative regions encompassing 44 administrative units.

Socio-Economic Zones and Management Units
Subdivisions of the territory based on socio-economic characteristics (four zones)*. The superimposition of both types of divisions (administrative and socio-economic) divides certain administrative units into smaller territories called management units. In other words, an administrative unit which covers two or three socio-economic zones includes the same number of management units.

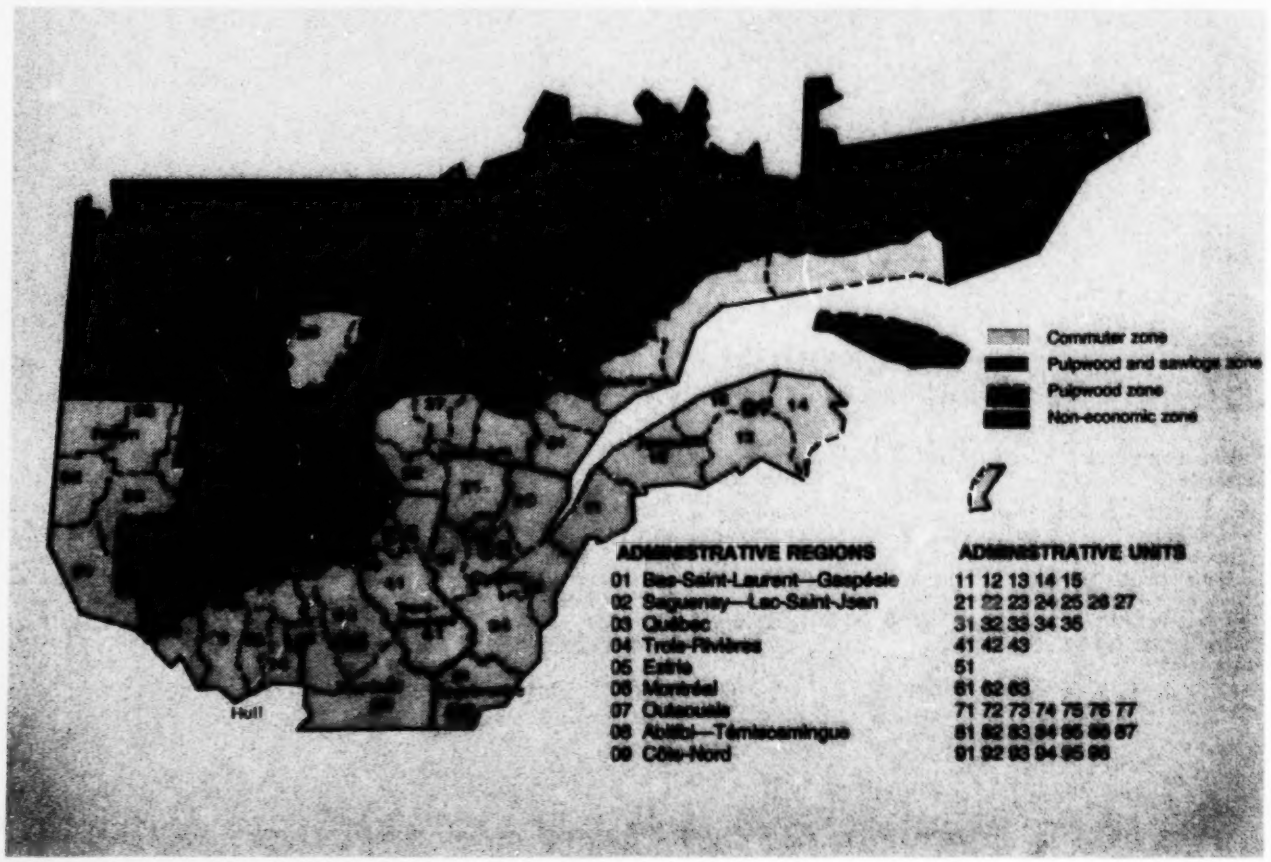
*** Commuter operations zone**
A territory located within a 65 km radius from towns of 5 000 inhabitants or more and which is the preferential source of supply for the forest industry.

Pulpwood and sawlogs operations zone
A territory located more than 65 km away from towns and whose accessible timber may be of interest to sawmills and pulp and paper industries as a secondary source of supply.

Pulpwood operations zone
The part of the territory of the commercial forest region which may be of interest to the industry as a tertiary source of supply.

Non-economic zone
The northern part of the territory which cannot currently be logged economically, but which may have some potential for the future.

Administrative boundaries of the ministère de l'Énergie et des Ressources

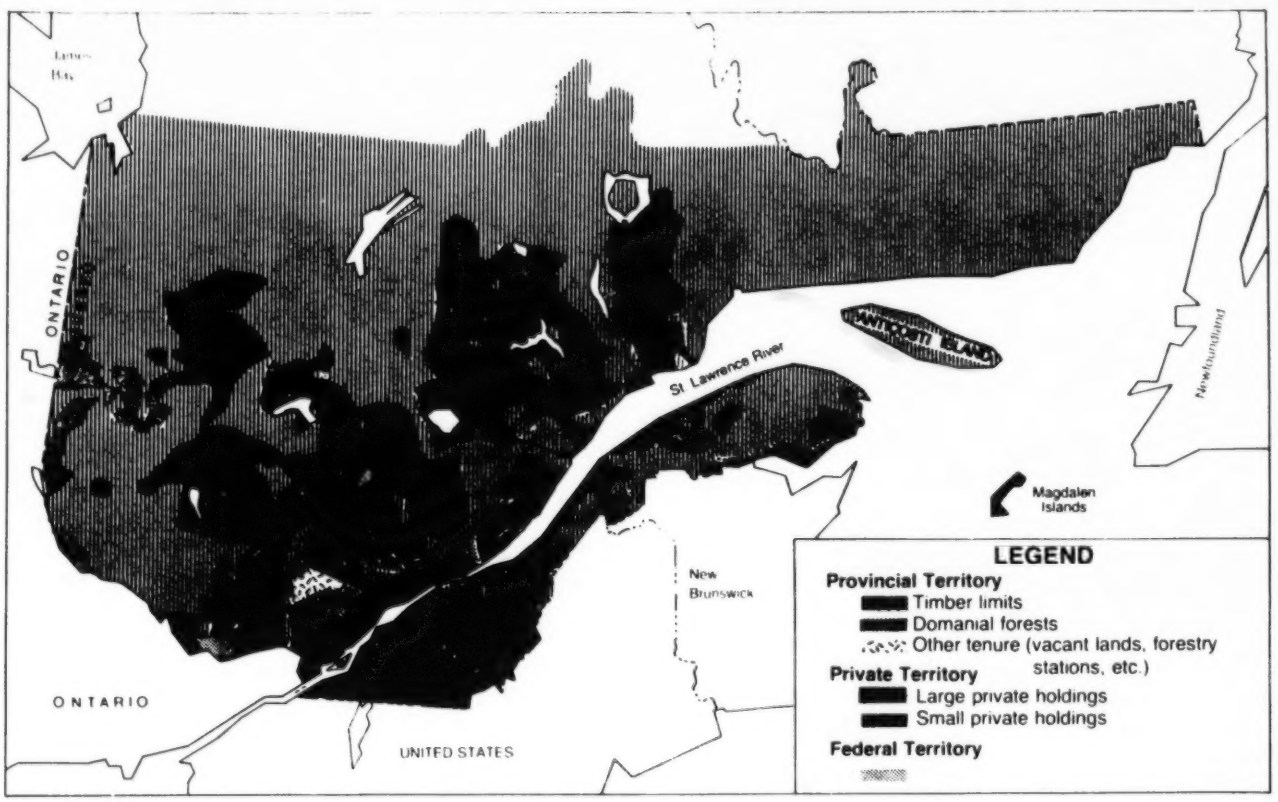


Note:
This map and the regional statistical data which follow do not take into account the changes that have recently been brought to the administrative regions boundaries.

1 Geographical Description of Québec's Forests

1.4 Types of Ownership and Tenure

Types of Ownership and Tenure in the Commercial Forest Region



Area by Types of Ownership and Tenure

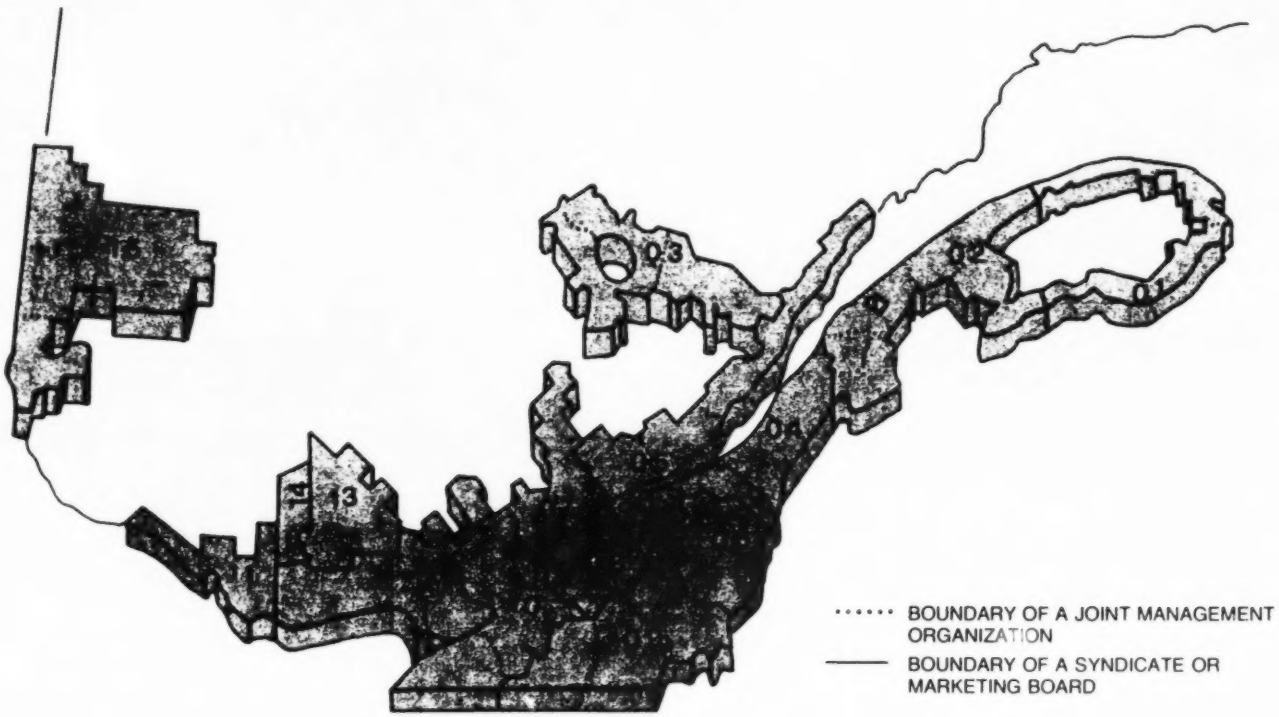
	The M.E.R.'s Administrative Regions									TOTAL
	01	02	03	04	05	06	07	08	09	
	km²	km²	km²	km²	km²	km²	km²	km²	km²	km²
Provincial Territory	**27 470**	**159 885**	**12 461**	**36 639**	**598**	**9 387**	**46 282**	**131 617**	**228 637**	**652 966**
Timber Limits*	1 729	42 437	5 718	24 927	28	4 533	23 196	19 449	25 195	147 214
Domanial Forests	23 819	110 442	6 058	7 176	555	2 766	20 516	109 784	182 275	463 391
Other Tenure (vacant lands, forestry stations, etc.)	1 922	7 006	685	4 536	15	2 088	2 548	2 384	21 167	42 351
Private Territory:	**15 371**	**6 143**	**21 578**	**14 101**	**12 829**	**18 366**	**16 607**	**8 073**	**1 924**	**108 992**
Large holdings**	1 291	500	2 567	4 277	990	43	434	482	928	11 512
Small holdings	14 080	5 643	19 011	9 824	11 839	18 323	10 173	7 591	996	97 480
Federal Territory	**277**	**52**	**243**	**880**	**—**	**214**	**473**	**202**	**280**	**2 331**
Total	**43 118**	**166 080**	**34 282**	**51 330**	**13 427**	**27 967**	**57 342**	**139 892**	**230 841**	**764 279**

* There are currently 34 timber limits
** More than 800 hectares in a single block.

1 Geographical Description of Québec's Forests

1.5 Administrative Boundaries of Private Forests

Boundaries of Areas Served by Syndicates, Marketing Boards and Joint Management Organizations



Syndicates, Marketing Boards and Joint Management Organizations

SYNDICATES OR MARKETING BOARDS	JOINT MANAGEMENT		
	Groups or companies (number)	Areas covered by agreements (hectares)	Owners involved (number)
01. Syndicat des producteurs de bois de la Gaspésie	4	52 744	767
02. Syndicat des producteurs de bois du Bas-Saint-Laurent	9	174 824	2 606
03. Syndicat des producteurs de bois du Saguenay — Lac-Saint-Jean	3	53 591	937
04. Office des producteurs de bois de Sainte-Anne-de-la-Pocatière	3	18 090	353
05. Office des producteurs de bois de la région de Québec	5	32 156	705
06. Syndicat des producteurs de bois de la Beauce	3	37 510	1 051
07. Syndicat des producteurs de bois de la Mauricie	2	14 848	306
08. Syndicat des producteurs de bois de Nicolet	2	16 907	420
09. Syndicat des producteurs de bois de l'Estrie	5	43 163	809
10. Syndicat des producteurs de bois de Montréal	1	1 164	30
11. Office des producteurs de bois de Pontiac	1	1 450	20
12. Syndicat des producteurs de bois des Laurentides	1	2 562	52
13. Syndicat des producteurs de bois du comté de Labelle	1	12 800	260
14. Office des producteurs de bois de la Gatineau	1	7 645	115
15. Syndicat des producteurs de bois de l'Abitibi — Témiscamingue	4	51 216	991
Total	**45**	**520 670**	**9 422**

Source: Fédération des producteurs de bois du Québec.

1 Geographical Description of Québec's Forests

1.6 Forest Co-Operatives

Québec Forest Co-Operatives

A) Distribution

	The M.E.R.'s Administrative Regions									
	01	02	03	04	05	06	07	08	09	Total
Number of co-operatives	7	9	7	2	1	1	4	16	4	**51**
Number of regional co-operatives										**2**
Number of members										**3 800***
Number of workers										**3 000***
Duration of operations										**7.5 to 8 month/year**

* Approximation

B) Sectors of Activity

Québec forest co-operatives are mainly involved in logging and they operate particularly as contractors for permit holders. Some of the co-operatives have their own logging permit. They harvest annually from 2.5 to 3 million m^3 solid. Most forest co-operatives also carry out management works. In certain cases this management work is the sole activity in which the co-operative is involved.

C) Assessment of Achievements

Share of forest co-operatives in overall management works (%)[1]
(Bas-Saint-Laurent — Gaspésie, O.G.C.s included)

	Monetary value ('000$)
1984-1985	3 846
1983-1984	1 723
1982-1983	1 196
1981-1982	862
1980-1981	585

0 5 10 15 20

(1) Decree no 580-85 allows forest co-operatives to carry out up to 50% of management works. This percentage is determined by the monetary value of the contracts they have signed for all types of works.

2 Inventory of Commercial Forests

2.1 Area

Area (km²)
A) By Socio-Economic Zone

	ZONES								TOTAL	
	Commuter		Pulpwood-Sawlogs		Pulpwood		Non-economic			
	km²	%	km²	%	km²	%	km²	%	km²	%
Total Area	**291 843**	**100**	**197 753**	**100**	**92 629**	**100**	**182 054**	**100**	**764 279**	**100**
Water	19 360	7	21 127	11	13 394	15	19 681	11	73 562	10
Non-Forest lands	37 652	13	181	—	27	—	179	—	38 039	5
Unproductive forest lands	19 291	6	19 640	10	12 470	13	45 232	26	96 633	12
Inaccessible productive forest lands (1)	4 591	2	1 411	1	721	1	438	—	7 161	1
Accessible productive forest lands (2)	210 949	72	155 394	78	66 017	71	116 523	63	548 883	72
Mature (3)	73 897	35	88 516	57	45 240	68	78 838	68	286 491	52
Immature	86 379	41	38 624	25	8 507	13	6 931	6	140 441	26
Regenerated	33 286	16	18 983	12	7 268	11	10 907	9	70 444	13
Regenerating	17 387	8	9 271	6	5 002	8	19 846	17	51 506	9
Federal Public Lands	**1 992**	**1**	**156**	**—**	**—**	**—**	**183**	**—**	**2 331**	**—**
Water	158	8	17	11	—	—	3	2	178	8
Non-forest lands	118	6	1	1	—	—	—	—	119	5
Unproductive forest lands	94	5	2	1	—	—	70	38	166	7
Inaccessible productive forest lands (1)	38	2	—	—	—	—	—	—	38	1
Accessible productive forest lands (2)	1 584	79	136	87	—	—	110	60	1 830	79
Mature (3)	644	41	37	27	—	—	80	73	761	40
Immature	724	46	85	62	—	—	—	—	809	47
Regenerated	149	9	5	4	—	—	—	—	154	9
Regenerating	67	4	9	7	—	—	30	17	106	4
Québec Public Lands (4)	**186 014**	**64**	**192 576**	**97**	**92 629**	**100**	**181 737**	**100**	**652 956**	**85**
Water	13 811	7	20 581	11	13 394	15	19 675	11	67 462	10
Non forest lands	748	—	163	—	27	—	179	—	1 117	—
Unproductive forest lands	16 191	9	19 330	10	12 470	13	45 112	26	93 103	14
Inaccessible productive forest lands (1)	3 306	2	1 372	1	721	1	438	—	5 837	1
Accessible productive forest lands (2)	151 958	82	151 130	78	66 017	71	116 332	63	485 437	75
Mature (3)	65 818	43	86 830	57	45 240	68	78 838	68	276 726	57
Immature	51 457	34	37 573	25	8 507	13	6 931	6	104 468	22
Regenerated	22 846	15	17 841	12	7 268	11	10 907	9	58 862	13
Regenerating	11 837	8	8 886	6	5 002	8	19 803	17	45 528	8
Private Lands	**103 681**	**35**	**5 177**	**3**	**—**	**—**	**134**	**—**	**108 992**	**15**
Water	5 374	5	546	11	—	—	3	2	5 923	5
Non forest lands	36 785	36	18	—	—	—	—	—	36 803	34
Unproductive forest lands	3 004	3	310	6	—	—	50	37	3 364	3
Inaccessible productive forest lands (1)	1 247	1	39	1	—	—	—	—	1 286	1
Accessible productive forest lands (2)	57 271	55	4 264	82	—	—	81	61	61 616	57
Mature (3)	7 398	13	1 686	39	—	—	68	84	9 152	15
Immature	34 113	60	1 051	25	—	—	—	—	35 164	57
Regenerated	10 286	18	1 142	27	—	—	—	—	11 428	19
Regenerating	5 474	9	385	9	—	—	13	16	5 872	9

(1) Inaccessible productive forest lands: lands with a slope superior to 50%.

(2) Accessible productive forest lands: lands with a slope inferior to 50%.

(3) Stages of development of stands (mature, immature, regenerated or regenerating). These stages correspond to periods in the growth cycle of a forest stand. The end of these periods has been established according to the net growth rate of the stand. A stand may include stems large enough for logging and be identified as immature if it is still increasing. On the other hand, another stand composed of smaller stems than the previous one might be considered ready for logging if its net growth rate is declining. Consequently, development stages do not correspond to fixed periods of time for all stands, they are related to the net growth rate which depends on the group of species, the quality of the station, climatic conditions and drainage.

(4) These figures do not entirely take into account transfers in ownership ratified by the James Bay and Northern Québec Agreement. Thus, they are slightly over-valued in the pulp and non-economic zones, to the detriment of federal and private lands.

NOTE: Based on data from the management inventory (1970-1979).

2 Inventory of Commercial Forests

2.1 Area (continued)

B) By the M.E.R.'s Administrative Regions

	TOTAL AREA				ACCESSIBLE PRODUCTIVE FOREST LANDS			
	Federal km²	Québec km²	Private km²	Total km²	Federal km²	Québec km²	Private km²	Total km²
01 Bas-Saint-Laurent — Gaspésie	277	27 470	15 371	43 118	252	24 873	10 548	35 673
02 Saguenay — Lac-Saint-Jean	52	159 885	6 143	166 080	31	125 316	3 285	128 632
03 Québec	243	12 461	21 578	34 282	202	11 029	12 984	24 215
04 Trois-Rivières	590	36 639	14 101	51 330	509	30 328	7 810	38 647
05 Estrie	—	598	12 829	13 427	—	566	7 482	8 048
06 Montréal	214	9 387	18 366	27 967	85	8 172	6 927	15 184
07 Outaouais	473	46 262	10 607	57 342	387	39 000	7 024	46 411
08 Abitibi — Témiscamingue	202	131 617	8 073	139 892	124	89 714	4 221	94 059
09 Côte-Nord	280	228 637	1 924	230 841	240	156 439	1 335	158 014
Total	**2 331**	**652 956**	**108 992**	**764 279**	**1 830**	**485 437**	**61 616**	**548 883**

C) By Tenure *(Québec Public Lands)*

	Total Area		Accessible productive forest lands		Accessible productive forest lands / total area
	km²	%	km²	%	%
Timber limits	147 214	22,5	122 232	25,2	83,1
Domanial forests	463 391	71,0	334 532	68,9	72,2
Other tenures	42 351	6,5	28 673	5,9	67,7
Total	**652 956**	**100,0**	**485 437**	**100,0**	**74,3**

2 Inventory of Commercial Forests

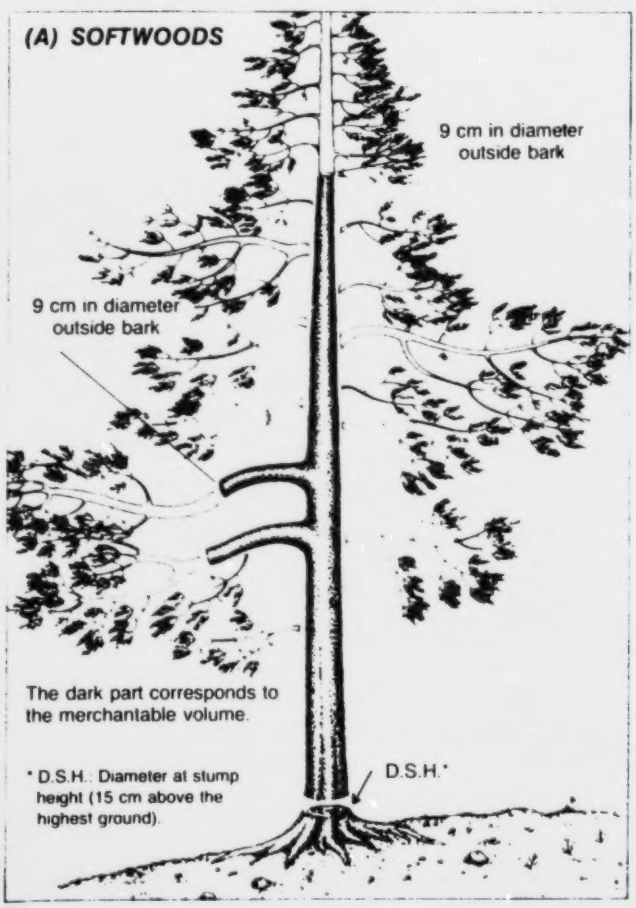
2.2 Gross Merchantable Volume

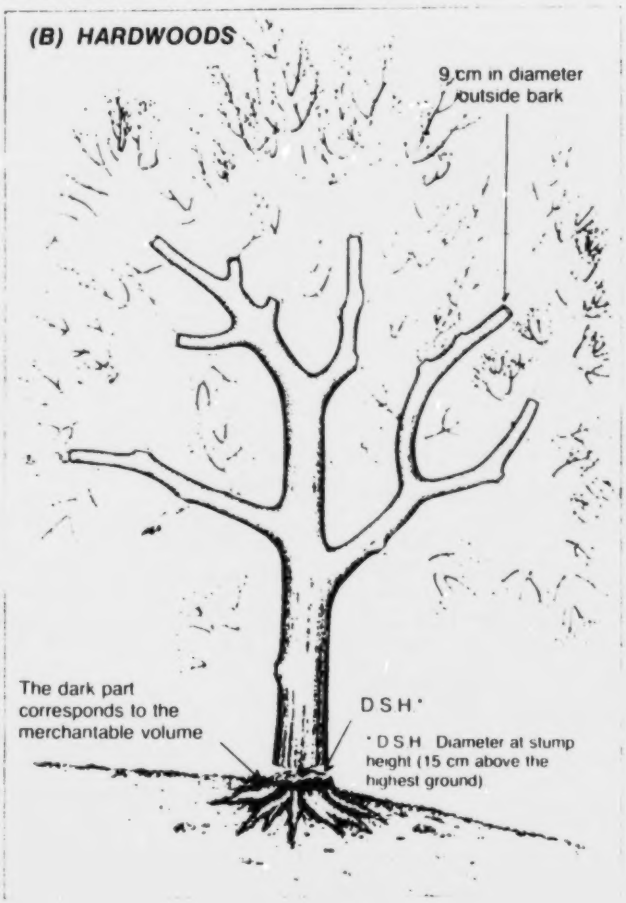
Gross Merchantable Volume* of Accessible Productive Zone *(1970-1979 Management Inventory)*

A) By Socio-Economic Zones

	ZONES								TOTAL	
	Commuter		Pulpwood-sawlogs		Pulpwood		Non-economic			
	'000m³	%	'000m³	%	'000m³	%	'000m³	%	'000m³	%
All Forests	**1 764 841**	**44**	**1 357 243**	**34**	**503 837**	**12**	**460 030**	**10**	**4 085 951**	**100**
Mature	906 177	51	1 021 478	75	440 084	87	418 705	91	2 786 444	68
Immature	775 805	44	289 970	22	49 274	10	29 261	6	1 144 310	28
Regenerated	82 859	5	45 795	3	14 479	3	12 064	3	155 197	4
Québec Public Forests	**1 352 269**	**77**	**1 325 485**	**98**	**503 837**	**100**	**459 670**	**100**	**3 641 261**	**89**
Mature	801 442	59	1 000 905	76	440 084	87	418 345	91	2 667 190	73
Immature	487 583	36	282 047	21	49 274	10	29 261	6	841 751	23
Regenerated	63 244	5	42 533	3	14 479	3	12 064	3	132 320	4
Private Forests	**396 357**	**22**	**31 758**	**2**	**—**	**—**	**197**	**—**	**428 312**	**11**
Mature	95 926	24	20 573	65	—	—	197	100	116 696	27
Immature	281 287	71	7 923	25	—	—	—	—	289 210	68
Regenerated	19 144	5	3 262	10	—	—	—	—	22 406	5
Federal Public Forests	**16 215**	**1**	**—**	**—**	**—**	**—**	**163**	**—**	**16 378**	**—**
Mature	8 809	54	—	—	—	—	163	100	8 972	54
Immature	6 935	43	—	—	—	—	—	—	6 935	43
Regenerated	471	3	—	—	—	—	—	—	471	3

*** Gross Merchantable Volume** *(volume of wood in the stem and branches 9 cm and more in diameter at the small end)*


(A) SOFTWOODS
9 cm in diameter outside bark
9 cm in diameter outside bark
The dark part corresponds to the merchantable volume.
* D.S.H.: Diameter at stump height (15 cm above the highest ground).
D.S.H.*


(B) HARDWOODS
9 cm in diameter outside bark
The dark part corresponds to the merchantable volume
D.S.H.*
* D.S.H. Diameter at stump height (15 cm above the highest ground)

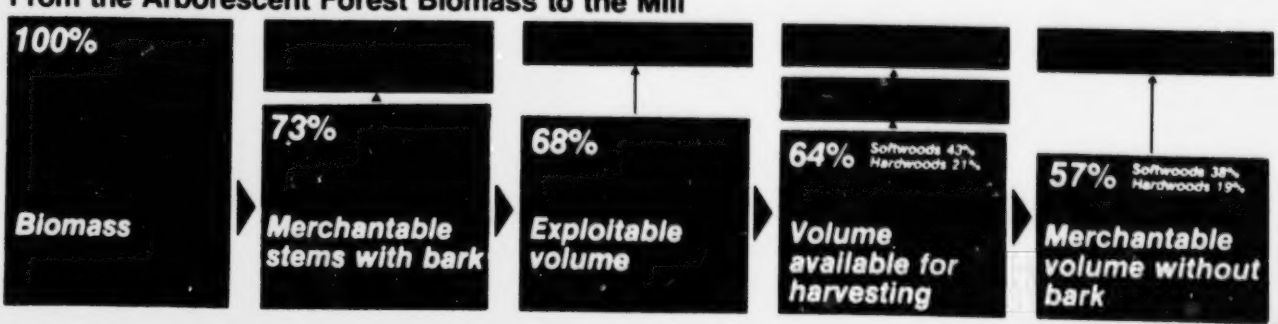
2 Inventory of Commercial Forests

2.2 Gross Merchantable Volume (continued)

B) By the M.E.R.'s Administrative Regions and by Species

ADMINISTRATIVE REGIONS OF THE M.E.R. AND OWNERSHIP	Softwoods					Hardwoods						Total
	Balsam fir	Spruce	Jack pine	Others	Sub-total	White birch	Yellow birch	Poplars	Maples	Others	Sub-Total	(100%)
	%	%	%	%	%	%	%	%	%	%	%	'000m³
01 — Bas-Saint-Laurent — Gaspésie	**54.5**	**20.3**	**0.1**	**5.6**	**80.5**	**4.9**	**2.4**	**7.0**	**4.5**	**0.8**	**19.4**	**309 246**
Federal Public Forests	46.2	20.1	—	5.9	72.3	9.2	1.6	10.9	5.7	0.2	27.6	1 836
Québec Public Forests	58.3	21.8	0.1	4.7	84.9	4.5	2.3	4.5	3.3	0.5	15.1	237 029
Private Forests	42.0	15.4	—	8.5	65.9	6.2	3.0	15.6	8.3	1.0	34.1	70 381
02 — Saguenay — Lac Saint-Jean	**15.4**	**62.8**	**6.9**	**0.3**	**85.3**	**9.1**	**0.3**	**5.1**	**0.1**	**—**	**14.6**	**880 584**
Federal Public Forests	10.8	68.1	2.4	0.3	81.6	10.5	0.3	7.5	—	—	18.3	295
Québec Public Forests	15.7	63.5	6.6	0.2	86.0	9.1	0.3	4.6	—	—	14.0	864 538
Private Forests	20.9	18.6	6.7	3.6	49.8	11.6	1.6	34.1	2.2	0.7	50.2	15 751
03 — Québec	**36.9**	**19.6**	**0.3**	**3.6**	**60.4**	**9.0**	**7.6**	**4.8**	**15.5**	**2.6**	**39.5**	**192 862**
Federal Public Forests	20.3	6.4	—	1.4	28.1	3.3	20.5	2.3	29.0	16.8	71.9	1 812
Québec Public Forests	44.4	28.4	0.3	1.6	74.7	10.9	7.1	3.7	2.9	0.6	25.2	94 456
Private Forests	29.8	11.2	0.4	5.7	47.1	7.3	7.9	5.9	27.5	4.3	52.9	96 594
04 — Trois-Rivières	**16.1**	**29.8**	**11.4**	**3.1**	**60.4**	**14.4**	**5.9**	**10.4**	**7.0**	**1.9**	**39.6**	**320 288**
Federal Public Forests	16.5	17.7	1.3	9.5	45.0	8.5	16.7	5.9	18.4	5.5	55.0	6 089
Québec Public Forests	15.6	31.8	13.3	2.4	63.1	15.8	5.5	11.1	3.7	0.7	36.8	260 340
Private Forests	18.1	21.4	3.6	5.8	48.9	8.3	6.6	7.5	21.3	7.3	51.0	53 859
05 — Estrie	**13.6**	**7.1**	**—**	**10.5**	**31.2**	**2.9**	**8.4**	**6.0**	**41.6**	**9.9**	**68.8**	**82 232**
Federal Public Forests	—	—	—	—	—	—	—	—	—	—	—	—
Québec Public Forests	25.5	10.5	—	5.0	41.0	6.8	16.1	7.0	25.9	3.2	59.0	6 902
Private Forests	12.1	6.7	—	11.2	30.0	2.4	7.4	5.8	43.6	10.7	69.9	55 330
06 — Montréal	**16.3**	**10.9**	**1.3**	**9.7**	**38.2**	**8.6**	**10.9**	**9.2**	**26.1**	**7.0**	**61.8**	**149 336**
Federal Public Forests	12.8	5.3	—	14.3	32.4	4.0	7.1	5.6	39.0	11.9	67.6	959
Québec Public Forests	20.7	15.7	2.1	6.3	44.8	10.7	14.8	9.6	17.4	2.7	55.2	87 803
Private Forests	9.9	4.1	0.1	14.5	28.6	5.6	5.3	8.7	38.6	13.2	71.4	60 575
07 — Outaouais	**17.3**	**15.0**	**1.9**	**11.8**	**46.0**	**10.5**	**11.4**	**8.0**	**16.7**	**7.4**	**54.0**	**467 872**
Federal Public Forests	7.1	4.5	0.7	13.7	26.0	3.6	3.5	10.8	26.7	29.3	73.9	3 847
Québec Public Forests	18.6	16.7	2.2	11.4	48.9	11.7	12.3	6.9	14.9	5.3	51.1	401 736
Private Forests	9.3	4.2	0.3	14.5	28.3	4.1	6.3	14.2	27.8	19.2	71.6	62 289
08 — Abitibi — Témiscamingue	**8.6**	**51.6**	**10.3**	**4.8**	**75.2**	**8.5**	**2.6**	**11.0**	**2.3**	**0.4**	**24.8**	**676 153**
Federal Public Forests	1.0	79.0	0.5	0.5	81.0	6.0	—	12.0	1.0	—	19.0	200
Québec Public Forests	8.7	50.9	10.5	5.0	75.1	8.6	2.8	10.6	2.4	0.4	24.8	660 203
Private Forests	13.5	18.4	6.7	1.8	40.4	11.3	0.2	47.5	0.5	—	59.5	15 750
09 — Côte-Nord	**30.4**	**61.0**	**0.7**	**0.4**	**92.5**	**5.4**	**—**	**2.0**	**—**	**—**	**7.4**	**1 032 491**
Federal Public Forests	49.9	32.8	2.0	2.1	86.8	5.8	0.5	6.3	0.4	0.1	13.1	1 556
Québec Public Forests	30.4	61.2	0.7	0.4	92.7	5.3	—	1.9	—	—	7.2	1 022 418
Private Forests	31.7	41.4	4.5	1.4	79.0	8.6	0.1	11.4	0.6	—	20.9	8 517
Total: Commercial Forests	**22.5**	**44.0**	**4.5**	**3.7**	**74.7**	**8.2**	**3.4**	**6.4**	**5.6**	**1.7**	**25.3**	**4 085 951**
Federal Public Forests	20.8	15.2	0.9	8.6	45.5	6.4	9.9	7.4	19.3	11.4	54.4	16 378
Québec Public Forests	22.7	48.1	4.9	3.0	78.7	8.5	3.1	5.7	3.1	0.9	21.3	3 641 261
Private Forests	21.6	11.7	1.1	9.1	43.5	6.2	5.7	11.5	25.1	8.0	56.5	428 312

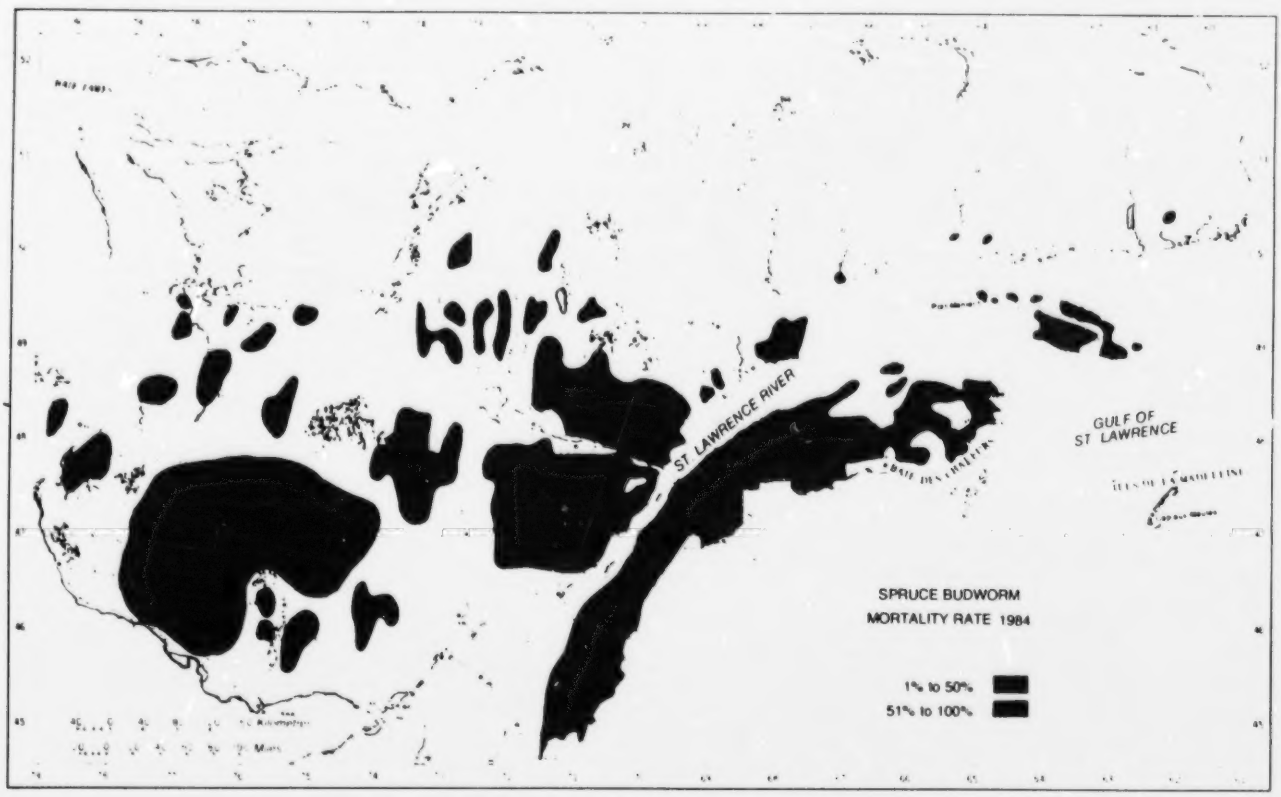
From the Arborescent Forest Biomass to the Mill



3 Forest Protection

3.1 Spruce Budworm

State of Infestation



Areas Affected*

	CLASSES OF DEFOLIATION (1) (hectare)				CLASSES OF MORTALITY (2) (hectare)				
	Light	Moderate	Severe	Total	1 - 25%	26 - 50%	51 - 75%	76 - 100%	Total
01 Bas-Saint-Laurent — Gaspésie	1 479 417	1 024 886	341 365	2 845 668	1 496 899	298 754	38 435	3 281	1 837 369
02 Saguenay — Lac-Saint-Jean	428 439	221 878	1 106 253	1 756 570	1 267 269	471 276	95 477	2 500	1 836 522
03 Québec	1 025 788	614 846	434 217	2 074 851	993 488	410 186	77 194	—	1 480 868
04 Trois-Rivières	198 440	276 094	1 583 009	2 057 543	448 901	203 751	157 814	25 938	836 404
05 Estrie	144 688	4 844	—	149 532	53 719	19 569	156	—	73 444
06 Montréal	97 657	33 906	319 531	451 094	208 559	11 032	469	—	219 560
07 Outaouais	189 689	60 938	43 750	294 377	474 064	259 844	85 063	2 897 816	3 716 787
08 Abitibi — Témiscamingue	141 409	145 314	38 751	325 474	181 565	238 599	334 220	881 877	1 636 261
09 Côte-Nord	198 442	63 905	825 782	1 088 129	676 753	213 788	53 614	51 875	996 010
Total (Commercial Forests)	**3 903 969**	**2 446 611**	**4 692 658**	**11 043 238**	**5 800 917**	**2 126 779**	**842 442**	**3 863 287**	**12 633 425**

(1) Defoliation means the foliage lost on annual growth: light (1% - 35%); moderate (35% - 70%); severe (70% - 100%)

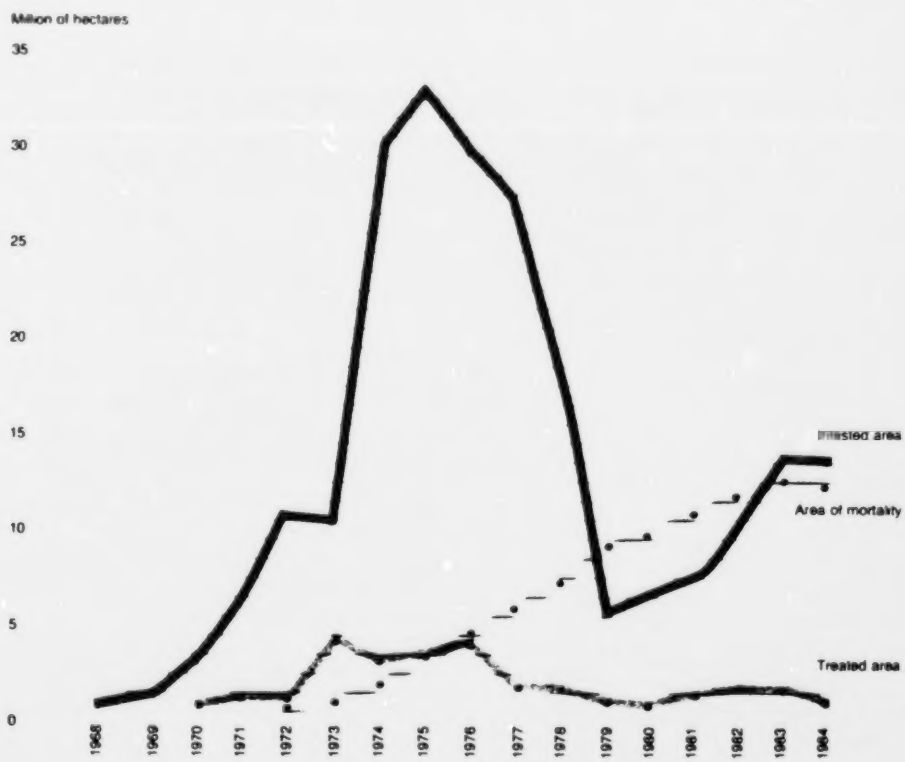
(2) Mortality is classified according to the proportion of dead trees in a stand (classes of 25%)

* Areas affected by the spruce budworm in 1984. *Choristoneura fumiferana (Clem.)*

3 Forest Protection

3.1 Spruce Budworm (continued)

Evolution of the Spruce Budworm Infestation



Areas Treated Against the Spruce Budworm

	1979	1980	1981	1982	1983	1984
Areas treated (1 000 hectare)						
Chemical treatment	566	166	690	1 267	1 208	384
Biological treatment	17	22	15	32	46	324
Total area treated	583	188	705	1 299	1 254	708
Cost of the program *(in current dollars)*	**3 700 800**	**3 348 800**	**6 970 000**	**10 982 000**	**14 487 000**	**16 753 900**
Average cost/ha chemically treated	5.96	15.07	9.43	8.15	10.98	16.88
Average cost/ha biologically treated	19.54	37.80	31.13	20.52	26.85	29.30
Average weighted cost/ha	6.35	17.76	9.88	8.46	11.56	23.65

Logging on Public Forest Lands Affected by the Spruce Budworm and Cost of Incentives *(Reduction in Stumpage Dues)* for the Government in 1983-1984

	Pulpwood		Sawlogs and others		TOTAL	
	Volume (m^3)	Reduction ($)	Volume (m^3)	Reduction ($)	Volume (m^3)	Reduction ($)
01 Bas-Saint-Laurent — Gaspésie	417 306	384 857	720 249	551 523	1 137 555	936 380
02 Saguenay — Lac-Saint-Jean	227 754	188 370	542 060	235 090	769 814	423 460
03 Québec	386 184	383 902	201 590	195 342	587 774	579 244
04 Trois-Rivières	—	—	—	—	—	—
05 Estrie	25 757	9 273	24 810	5 912	50 567	15 185
06 Montréal	24 532	6 552	46 148	13 067	70 680	19 619
07 Outaouais	271 165	707 784	115	107	271 280	707 893
08 Abitibi — Témiscamingue	—	—	19 142	5 572	19 142	5 572
09 Côte-Nord	170 774	83 661	31 144	12 677	201 918	96 338
Total	**1 523 472**	**1 784 899**	**1 586 258**	**1 019 290**	**3 109 730**	**2 783 689**

3

3.2 Other Insects and Diseases

Current Situation by Administrative Region

	THE M.E.R.'S ADMINISTRATIVE REGIONS								
	01	02	03	04	05	06	07	08	09
% of total forest area inventoried	92	27	97	76	100	93	83	37	27
Distribution of sampling by groups of species									
— Hardwoods 100%	10	12	19	11	2	18	18	5	5
— Softwoods 100%	14	13	13	13	5	7	15	10	10
Insects most detrimental to the forest apart from the spruce budworm	Bruce spanworm	Birch skeletonizer	Bruce spanworm	Swaine jack-pine sawfly	Bruce spanworm	Gypsy moth	Jack-pine sawfly	Forest pent caterpillar	Poplar serpentine leafminer
	Poplar serpentine leafminer	Swaine jack-pine sawfly	Birch casebearer	White-pine weevil	Balsam twig aphid	Fall webworm	Birch skeletonizer	White-pine weevil	Birch casebearer
							Bruce spanworm		
Most prevalent diseases	Gremmeniella canker	Western gall rust	Gremmeniella canker	Gremmeniella canker	Climatic damages (uprooting, winter drying)	Dutch elm disease	Gremmeniella canker	Gremmeniella canker	Gremmeniella canker
			Deciduous dieback		Deciduous dieback	White-pine blister rust	White-pine blister rust	Western gall rust	

Entomological and Pathological Problems

a) Softwoods

SPECIES/ INSECTS AND DISEASES	THE M.E.R.'S ADM. REGIONS								
	01	02	03	04	05	06	07	08	09
SPRUCE (plantations)									
— Spruce bud moth	T	T	L	T	L	L	L	L	T
— Spruce budworm	L	—	—	—	—	—	—	L	—
BALSAM FIR									
— Spruce budworm	M	H	M	H	M	M	H	H	M
— Balsam fir sawfly	—	—	—	—	—	—	T	—	—
LARCH									
— Eastern larch beetle	—	—	—	—	—	M	—	—	—
— Larch sawfly	—	T	—	—	—	—	—	—	L
— Larch casebearer	—	—	—	—	—	T	—	—	—
PINE									
— White-pine weevil	T	T	T	T	T	L	M	M	T
— Gremmeniella canker	M	L	M	M	T	L	L	T	H
RED PINE									
— Red-headed sawfly	—	—	—	—	—	—	T	—	—
JACK PINE									
— Swaine jack-pine sawfly	T	L	—	L	—	—	L	L	—
— Jack-pine sawfly	—	—	—	T	—	—	T	—	—
— Western gall rust	—	M	—	—	—	—	L	L	L
WHITE PINE									
— White pine blister rust	T	T	M	M	T	L	M	M	—

b) Hardwoods

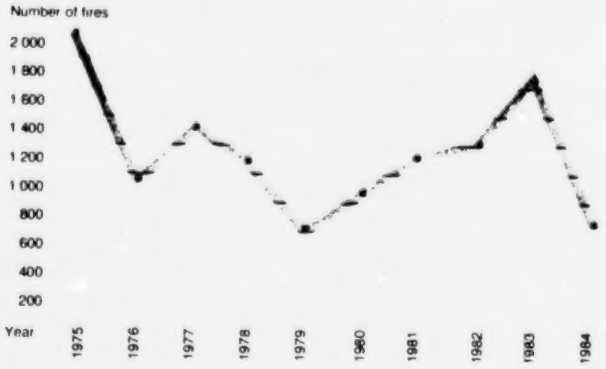
SPECIES/ INSECTS AND DISEASES	THE M.E.R.'S ADM. REGIONS								
	01	02	03	04	05	06	07	08	09
BIRCH									
— Birch skeletonizer	—	L	T	L	—	—	L	T	—
— Birch casebearer	L	T	L	T	T	—	—	—	—
— Birch leafminer	L	T	T	L	T	L	L	T	T
MAPLE									
— Dieback	—	—	H	L	H	T	T	—	—
SUGAR MAPLE									
— Bruce spanworm	T	—	H	—	H	T	L	—	—
POPLAR									
— Bruce spanworm	H	—	—	—	—	—	L	—	—
— Poplar serpentine leafminer	M	—	—	—	—	—	—	—	H
TREMBLING ASPEN									
— Ink spot	T	L	T	T	—	T	L	M	L
AMERICAN ELM									
— Dutch elm disease	T	T	M	M	M	M	H	T	—
OAK, POPLAR, BIRCH, MAPLE									
— Gypsy moth	—	—	—	T	T	T	—	—	—
— Forest pent caterpillar	—	—	—	—	—	—	—	M	—
— Fall webworm	—	—	—	—	—	L	L	—	—

NOTE H High
M Moderate
T Trace
L Light

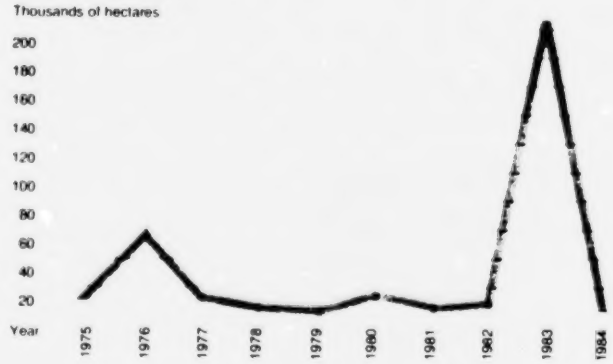
3 Forest

3.3 Forest Fires

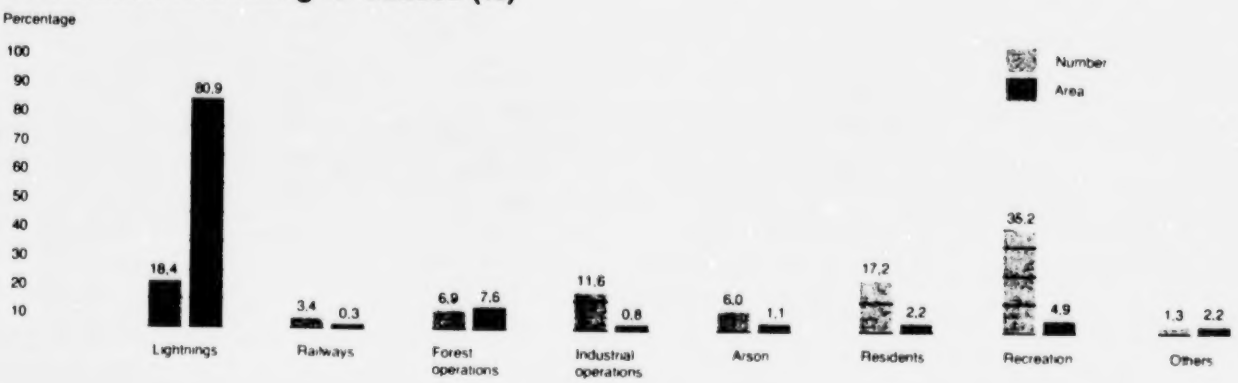
Number of Fires



Areas Burned



Forest Fires between 1975 and 1984 Distribution According to Causes (%)



Areas Destroyed by Forest Fires *(hectares)*

TYPES OF STANDS	1976	1977	1978	1979	1980	1981	1982	1983	1984	Total
Mature	25 951	8 958	677	1 239	1 806	1 551	5 818	173 514	1 502	221 016
Immature	10 782	1 718	581	712	2 531	375	991	27 247	550	45 487
Regenerated	6 192	435	201	543	564	241	389	6 216	384	15 165
Regenerating (after harvesting)	8 618	2 320	1 333	569	2 329	239	681	15 431	636	32 156
Others	5 399	740	872	138	5 947	75	91	16 494	10	29 766
Total	**56 942**	**14 171**	**3 664**	**3 201**	**13 177**	**2 481**	**7 970**	**238 902**	**3 082**	**343 590**

3 Forest Protection

3.3 Forest Fires (continued)

Distribution by the M.E.R.'s Administrative Regions

		Administrative Regions										
		01	02	03	04	05	06	07	08	09	10	Total
1975	N	112	254	129	175	31	262	556	322	122	0	1 963
	A	634	9 820	281	613	19	1 019	782	3 292	656	0	17 096
1976	N	86	169	68	59	7	67	199	227	114	0	996
	A	264	30 924	63	239	14	85	650	4 212	20 491	0	56 942
1977	N	74	131	96	146	19	129	363	307	56	0	1 321
	A	44	677	260	2 673	82	2 271	2 993	5 131	40	0	14 171
1978	N	112	147	115	103	15	132	192	181	163	0	1 160
	A	1 043	619	294	392	19	85	240	601	371	0	3 664
1979	N	36	89	70	55	20	41	76	144	84	0	615
	A	50	212	68	34	7	85	62	380	2 303	0	3 201
1980	N	26	168	103	76	13	92	112	184	87	0	861
	A	28	4 133	125	142	14	191	176	8 089	279	0	13 177
1981	N	24	235	113	89	18	119	103	315	98	0	1 114
	A	14	1 350	88	309	5	146	100	335	134	0	2 481
1982	N	40	194	121	121	22	176	250	231	47	0	1 202
	A	44	1 953	119	4 828	16	222	293	131	364	0	7 970
1983	N	80	281	189	199	12	157	233	367	135	0	1 653
	A	146	161 294	399	73 853	2	127	534	2 380	167	0	238 902
1984	N	45	97	70	67	27	79	92	161	45	0	683
	A	87	2 052	112	147	26	118	68	384	108	0	3 082
Total	**N**	**635**	**1 765**	**1 074**	**1 090**	**184**	**1 254**	**2 176**	**2 439**	**951**	**0**	**11 568**
	A	**2 354**	**213 034**	**1 809**	**83 230**	**204**	**4 349**	**5 878**	**24 915**	**24 913**	**0**	**380 686**
Average	N	64	177	107	109	18	125	218	244	95	0	1 157
	S	235	21 303	181	8 323	20	435	588	2 492	2 491	0	36 068

Note: N = number of fires
A areas destroyed (in hectares)

Distribution of Fire Protection Costs *(intensive protection zone)**

Parties involved		Costs in 1982 (million $)			Costs in 1983 (million $)		
		Organization	Extinguishing	Total	Organization	Extinguishing	Total
Government	$	16.32	1.40	17.72	13.91	9.14	23.05
	%	73.7	60.9	75.2	66.7	78.7	70.9
Members of other societies	$	4.38	0.41	4.79	4.57	2.48	7.05
	%	19.8	17.8	19.6	21.9	21.3	21.7
Holders of commercial logging permits	$	1.45	0.49	1.94	2.39	—	2.39
	%	6.5	21.3	7.9	11.4	—	7.4
Total	**$**	**22.15**	**2.30**	**24.45**	**20.87**	**11.62**	**32.49**
	%	**100**	**100**	**100**	**100**	**100**	**100**

* Intensive protection: Systematic fight against all fires likely to damage the forest, as soon as they are discovered, combined with preventive measures.
Intensive protection zone: All forests under management and the territory surrounding them. This zone covers more than 70% of the commercial forest region. It extends from the most southerly part of Québec to about the 51st parallel.

4 Forest Management

4.1 Annual Allowable Wood Volume

Annual Allowable Volume for the Period 1980-1990 Expressed in Merchantable Volume without Bark[1]

A) By Socio-Economic Zone

	ZONES						TOTAL	
	Commuter		Pulpwood and sawlogs		Pulpwood			
	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%
Total annual allowable volume	**32 233**	**100**	**15 347**	**100**	**3 934**	**100**	**51 514**	**100**
Balsam fir, spruce, jack pine	18 764	58	11 969	78	3 646	93	34 379	67
Other softwoods	2 261	7	466	3	8	—	2 735	5
Hardwoods	11 208	35	2 912	19	280	7	14 400	28
Québec public forests	**19 900**	**62**	**15 017**	**98**	**3 934**	**100**	**38 851**	**75**
Balsam fir, spruce, jack pine [2,3]	14 720	74	11 799	78	3 646	93	30 165	78
Other softwoods [4]	851	4	386	1	8	—	1 245	3
Hardwoods [4]	4 329	22	2 832	21	280	7	7 441	19
Private forests [5]	**12 333**	**38**	**330**	**2**	**—**	**—**	**12 663**	**25**
Balsam fir, spruce, jack pine	4 044	33	170	51	—	—	4 214	33
Other softwoods	1 410	11	80	25	—	—	1 490	12
Hardwoods	6 879	56	80	24	—	—	6 959	55

B) By the M.E.R.'s Administrative Regions

	In Québec Public Forests			In Private Forests[5]			Total		
	Balsam fir, spruce, jack pine[2] 1 000 m³	Other soft-woods[4] 1 000 m³	Hard-woods[4] 1 000 m³	Balsam fir, spruce, jack pine 1 000 m³	Other soft-woods 1 000 m³	Hard-woods 1 000 m³	Balsam fir, spruce, jack pine 1 000 m³	Other soft-woods 1 000 m³	Hard-woods 1 000 m³	All species 1 000 m³
01 Bas-Saint-Laurent — Gaspésie	3 210	109	312	1 091	208	645	4 301	317	957	5 575
02 Saguenay — Lac-Saint-Jean	9 375	16	1 441	157	25	231	9 532	41	1 672	11 245
03 Québec	1 228	19	260	1 275	243	1 488	2 503	262	1 748	4 513
04 Trois-Rivières	2 470	58	768	477	214	737	2 947	272	1 505	4 724
05 Estrie	31	3	28	368	157	781	399	160	809	1 368
06 Montréal	492	41	347	326	340	1 594	818	381	1 941	3 140
07 Outaouais	1 669	486	1 825	239	291	1 070	1 908	777	2 895	5 580
08 Abitibi — Témiscamingue	6 529	497	1 847	121	5	300	6 650	502	2 147	9 299
09 Côte-Nord	3 233	16	613	160	7	113	3 393	23	726	4 142
Subtotal	**28 237**	**1 245**	**7 441**	**4 214**	**1 490**	**6 959**	**32 451**	**2 735**	**14 400**	**49 886**
09 Add. available volume[3]	1 928	—	—	—	—	—	1 928	—	—	1 928
TOTAL	**30 165**	**1 245**	**7 441**	**4 214**	**1 490**	**6 959**	**34 379**	**2 735**	**14 400**	**51 514**

Notes:

(1) Excluding federal public forests.

(2) Available volumes for balsam fir, spruce and jack pine according to management plans for the period 1980-1990. They take into account anticipated sylvicultural projects and provide for reductions after 40 years.

(3) Because of low demand in administrative units 94, 95 and 96, the allowable volume determined for region 09 is less than the volume actually available.

(4) Compilation based on biophysical profiles only.

(5) With respect to small private forests, data have been evaluated by the Service des techniques de l'aménagement, taking into account the reforestation program. With regard to large private forests, data are taken from *Ressources et activités en forêt privée, 1979*.

Annual Allowable Volume, Merchantable Volume and Biomass Volume *(per hectare)* for all Species[1]

SOCIO-ECONOMIC ZONE	QUÉBEC PUBLIC FORESTS (m³/ha)		PRIVATE FORESTS (m³/ha)		TOTAL (m³/ha)	
	Merch. vol.	Bio. vol.	Merch. vol.	Bio. vol.	Merch. vol.	Bio. vol.
Commuter	1.6	2.6	2.1	3.6	1.8	3.0
Pulpwood and sawlogs	1.1	1.9	0.8	1.3	1.1	1.9
Pulpwood	0.9	1.4	—	—	0.9	1.4
Average	**1.3**	**2.1**	**2.0**	**3.4**	**1.4**	**2.4**

(1) The areas used to calculate the allowable volume are 303 000 km² for public forests, and 63 000 km² for large and small private forests.

NOTE: The annual allowable volume should not be mixed up with the total available volume which will be the object of a distinct publication in 1986.

4 Forest

4.2 Harvest

Volume of Wood Harvested in Québec in 1983-1984

A) By Socio-Economic Zone

	Zones									
	Commuter		Pulpwood and sawlogs		Pulpwood		Non-Economic		Total	
	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%
Total Annual Harvest	**18 416**	**100**	**11 414**	**100**	—	—	—	—	**29 830**	**100**
Softwoods	14 980	81	11 107	97	—	—	—	—	26 087	87
Hardwoods	3 436	19	307	3	—	—	—	—	3 743	13
Québec Public Forests	**11 995**	**65**	**11 244**	**99**	—	—	—	—	**23 239**	**78**
Softwoods	10 145	85	10 937	97	—	—	—	—	21 082	91
Hardwoods	1 850	15	307	3	—	—	—	—	2 157	9
Private Forests*	**6 421**	**35**	**170**	**1**	—	—	—	—	**6 591**	**22**
Softwoods	4 835	75	170	1	—	—	—	—	5 005	76
Hardwoods	1 586	25	0	—	—	—	—	—	1 586	24

* Estimated

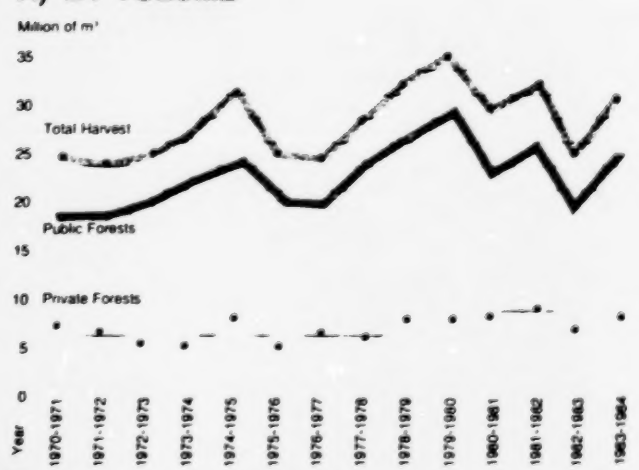
B) By the M.E.R.'s Administrative Regions ('000 m³)

	Public Forests			Private Forests*			Total		
	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total
01 Bas-Saint-Laurent — Gaspésie	1 746	243	1 989	1 476	360	1 836	3 222	603	3 825
02 Saguenay — Lac-Saint-Jean	7 490	209	7 699	330	37	367	7 820	246	8 066
03 Québec	810	106	914	1 770	153	1 923	2 580	259	2 839
04 Trois-Rivières	1 491	281	1 772	406	85	491	1 897	366	2 263
05 Estrie	62	48	110	475	350	825	537	398	935
06 Montréal	677	160	837	277	235	512	954	395	1 349
07 Outaouais	963	469	1 432	196	279	475	1 159	748	1 907
08 Abitibi — Témiscamingue	5 936	624	6 560	53	87	140	5 989	711	6 700
09 Côte-Nord	1 907	17	1 924	22	—	22	1 929	17	1 946
Total	**21 082**	**2 157**	**23 239**	**5 005**	**1 586**	**6 591**	**26 087**	**3 743**	**29 830**

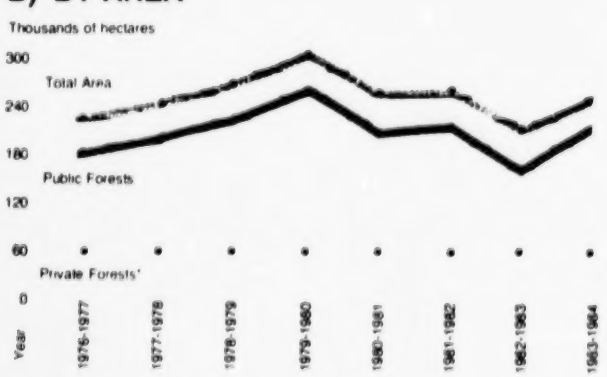
(1) Estimated data, excluding the production of firewood by small woodlot owners.

Evolution of the Harvest *(excluding firewood)*

A) BY VOLUME



B) BY AREA

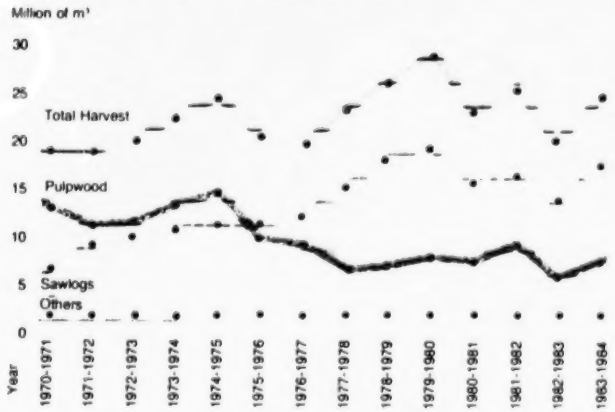


* Estimate made by the Fédération des producteurs de bois du Québec

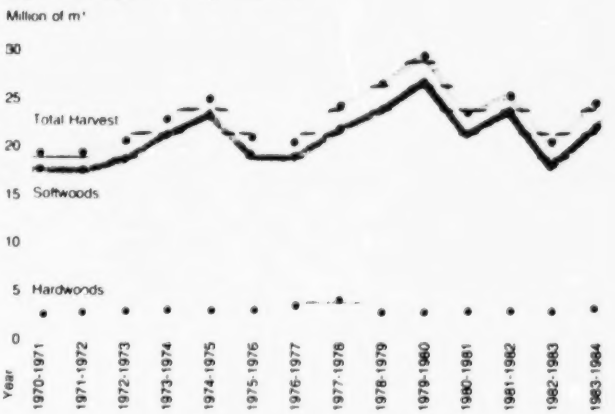
4

4.2 Harvest (continued)

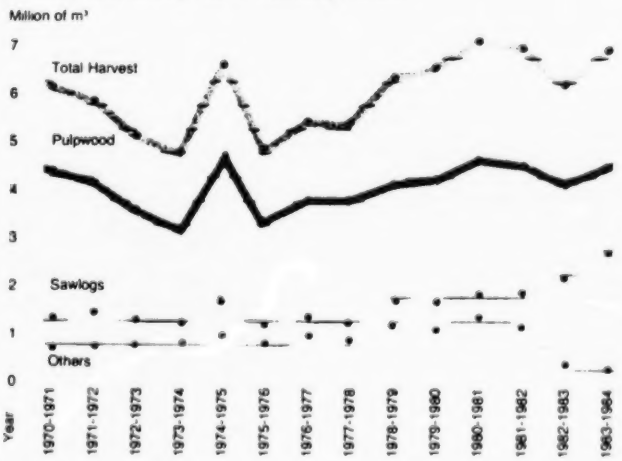
C) ON PUBLIC FORESTS
According to Primary Use



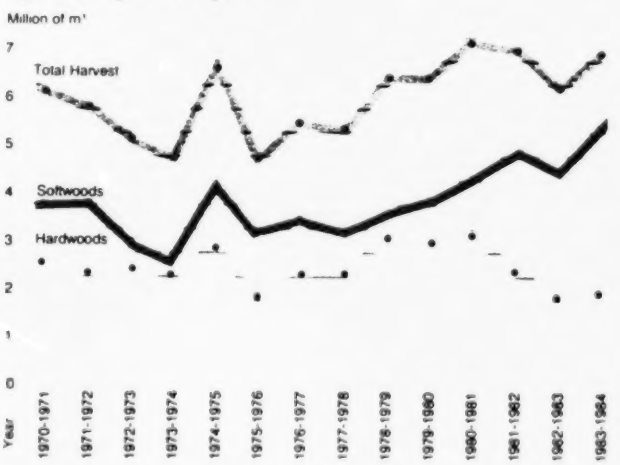
By Groups of Species



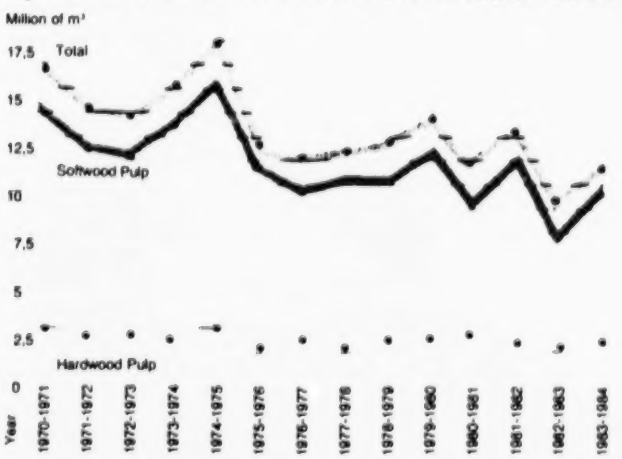
D) ON PRIVATE FORESTS
According to Primary Use



By Groups of Species



E) PULPWOOD *On Public and Private Forests By Groups of Species*



4 Forest Management

4.2 Harvest (continued)

Logging Systems on Public Forests

	1981-1982			1982-1983			1983-1984		
	Mechanical	Manual	Total	Mechanical	Manual	Total	Mechanical	Manual	Total
Full tree*	27%	13%	40%	37%	19%	55%	44%	22%	66%
Tree length*	1%	48%	49%	2%	35%	37%	—	28%	28%
Shortwood**	4%	7%	11%	2%	5%	7%	3%	3%	6%
Total	**32%**	**68%**	**100%**	**41%**	**59%**	**100%**	**47%**	**53%**	**100%**

* Part of this wood is cross cut at the jetty for river driving.

** Only includes timber cross cut at the stump.

Transportation of Logs from Public Forests to Mills

Means of Transportation	1981-1982 1982-1983	1983-1984
Truck	65%	75%
River drive	30%	23%
Railroad	5%	2%

River drive

	1975	1981	1982	1983
Network length (km)	2 600	2 500	2 100	2 100
Volume driven (1 000 m³)	8 500	7 500	7 000	5 200
Average distance driven (km)	175	250	240	240

Volume of the Harvest from Private Forests Marketed by Syndicates and Marketing Boards

Syndicate or Board	1980		1981		1982		1983	
	Harvest m³ stacked*	Number of producers	Harvest m³ stacked*	Number of producers	Harvest m³ stacked*	Number of producers	Harvest m³ stacked*	Number of producers
Gaspésie	413 178	1 970	579 570	2 285	413 481	2 423	507 802	2 630
Bas-Saint-Laurent	1 122 876	4 000	1 094 037	4 000	996 015	3 500	1 379 811	5 518
Saguenay — Lac-Saint-Jean	319 666	1 234	326 371	1 734	324 471	1 702	366 130	1 927
La Pocatière	547 552	3 600	590 200	4 000	443 680	4 000	451 890	3 000
Beauce	625 075	3 500	836 405	5 000	592 583	4 900	612 204	5 310
Québec	848 359	6 334	958 363	5 355	828 940	5 000	802 396	6 393
Estrie	758 134	1 807	752 307	2 221	568 396	2 429	586 601	1 927
Nicolet	164 804	650	171 300	550	131 517	506	141 559	800
Mauricie	203 501	348	181 361	336	197 545	340	188 414	332
Montréal	—	—	—	—	—	—	91 935	200
Laurentides	839 022	896	851 933	708	414 173	700	397 643	700
Labelle	259 149	637	242 216	630	245 991	530	200 623	530
Gatineau	152 466	486	169 143	550	142 055	400	127 196	400
Pontiac	—	—	—	—	—	—	—	—
Abitibi — Témiscamingue	77 788	133	96 190	200	203 361	269	189 228	338
Total	**6 331 570**	**25 597**	**6 649 396**	**27 589**	**5 502 190**	**26 699**	**6 043 432**	**30 005**

* 1 m³ solid = 1.5 m³ stacked.

4 Forest Management

4.3 Infrastructure for the Transportation of Roundwood (from Public Forests to Mills)

The M.E.R.'s Network of Permanent Forest Roads

Administrative Region	SOCIO-ECONOMIC ZONES						TOTAL	
	Commuter		Pulpwood-sawlogs		Pulpwood			
	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)
01 Bas-Saint-Laurent — Gaspésie	1 231	117	—	—	—	—	1 231	117
02 Saguenay — Lac-Saint-Jean	1 186	60	522	33	—	—	1 708	93
03 Québec	237	19	—	—	—	—	237	19
04 Trois-Rivières	76	6	649	19	—	—	725	25
05 Estrie	—	—	—	—	—	—	—	—
06 Montréal	82	4	—	—	—	—	82	4
07 Outaouais	324	9	579	27	—	—	903	36
08 Abitibi — Témiscamingue	607	26	790	36	—	—	1 397	62
09 Côte-Nord	435	29	111	—	116	5	662	34
TOTAL	**4 178**	**270**	**2 651**	**115**	**116**	**5**	**6 945**	**390**

Network of Rivers Used for Driving *(km)*

Administrative Region	SOCIO-ECONOMIC ZONES			TOTAL
	Commuter	Pulpwood-sawlogs	Pulpwood	
02 Saguenay — Lac-Saint-Jean	231.25	87.50	—	318.75
03 Québec	118.75	—	—	118.75
04 Trois-Rivières	350.00	262.50	—	612.50
07 Outaouais	587.50	262.50	—	850.00
09 Côte-Nord	156.25	43.75	—	200.00
TOTAL	**1 443.75**	**656.25**	**—**	**2 100.00**

Railway Network Used for Transporting Roundwood *(km)*

Administrative Region	SOCIO-ECONOMIC ZONES			TOTAL
	Commuter	Pulpwood-sawlogs	Pulpwood	
02 Saguenay — Lac-Saint-Jean	237	125	—	362
03 Québec	225	—	—	225
04 Trois-Rivières	356	81	—	437
07 Outaouais	75	—	—	75
TOTAL	**893**	**206**	**—**	**1 099**

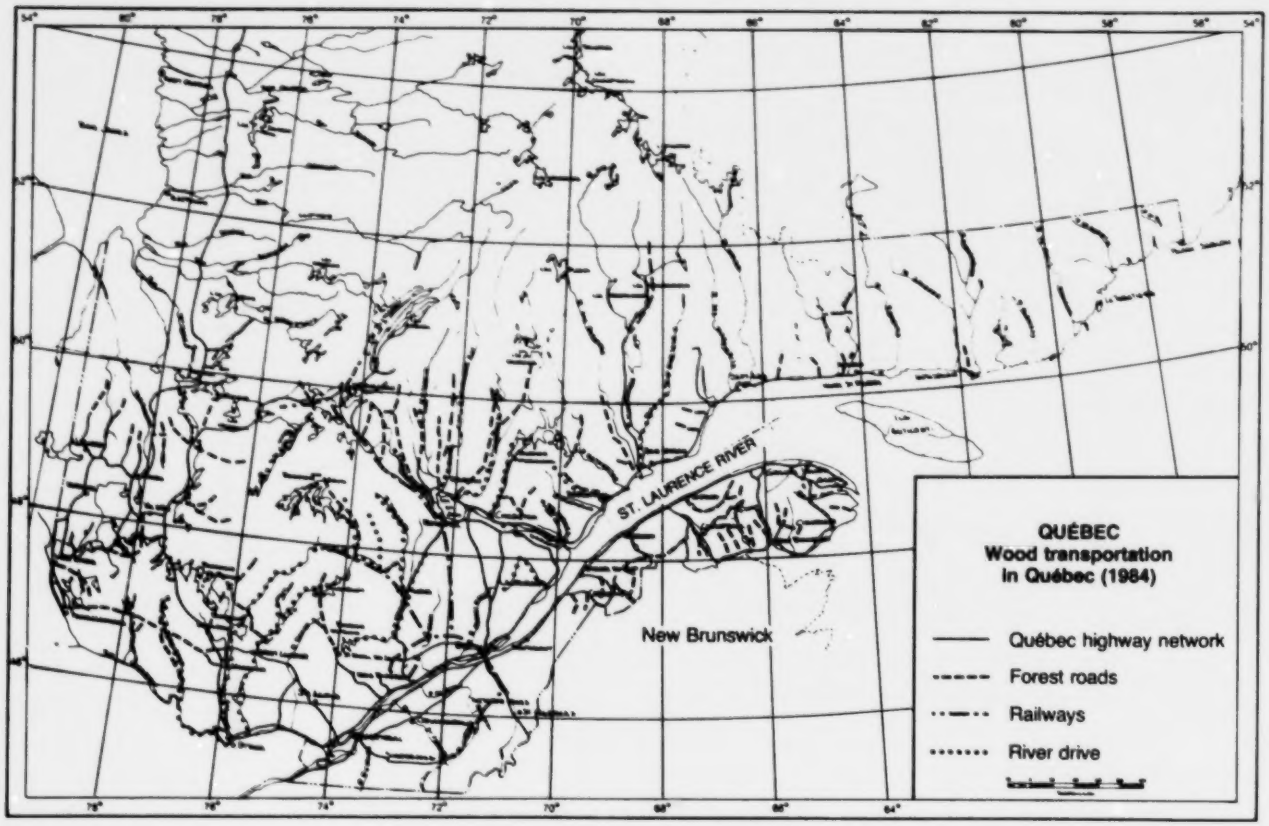
Construction of, and Improvements in Forest Road *(km)* and Bridges *(units)*

	CONSTRUCTION						IMPROVEMENT					
	M.E.R.		Industry		% of Network /1975		M.E.R.		Industry		% of Network /1975	
	Roads	Bridges	Roads	Bridges	Roads	Bridges	Roads	Bridges	Roads	Bridges	Roads	Bridges
1976	85	10	—	—	1.9	4.2	80	1	—	—	1.8	0.4
1977	178	21	—	—	4.0	8.9	96	15	—	—	2.1	6.1
1978	242	24	—	—	5.4	10.1	135	3	—	—	2.8	1.1
1979	228	18	151	8	8.5	11.0	20	3	348	3	7.4	2.1
1980	72	2	450	26	11.7	11.9	—	—	355	8	6.6	2.5
1981	56	1	484	27	11.6	11.9	—	—	311	6	5.3	1.7
1982	78	—	178	8	5.7	3.4	—	—	154	3	2.4	0.8
1983	29	—	269	9	6.7	3.8	16	—	245	6	3.9	1.6

4 Forest Management

4.3 Infrastructure for the Transportation of Roundwood (From Public Forests to Mills) (continued)

Transportation of Roundwood



4 Forest Management

4.4 Reforestation

Harvesting of Cones in 40-litre Units by Species and by the M.E.R.'s Administrative Regions in 1983-1984

SPECIES	M.E.R.'s ADMINISTRATIVE REGIONS									TOTAL
	01	02	03	04	05	06	07	08	09	
Balsam fir	4.0									4.0
European larch							18.9			18.9
Tamarack	29.7					36.4	4.4			70.5
Norway spruce							8.3			8.3
White spruce	18.0						1.4			19.4
Black spruce	1 421.7	11.4	63.8			419.5	589.7		222.9	2 729.0
Jack pine	1.0	4 724.2		856.1		1 779.7		10 095.0	375.2	17 831.2
Red pine			332.6	806.9		2 672.8	339.3	220.5	13.7	16.0
Eastern white pine		18.0							53.0	4 385.8
Swiss mountain pine	16.0									16.0
Black pine	1.0		1.0				1.0			3.0
Scots pine	7.0									7.0
TOTAL	**1 498.4**	**4 753.6**	**397.4**	**1 663.0**		**4 908.4**	**963.0**	**10 315.5**	**664.8**	**25 184.1**

Area of Tree Seed Orchards *(hectare)*

SPECIES	M.E.R.'s ADMINISTRATIVE REGIONS									TOTAL
	01	02	03	04	05	06	07	08	09	
European larch										
Tamarack										
Norway spruce										
White spruce	27		5	17		15			11	75
Black spruce	125	71	34					34	30	294
Red spruce										
Jack pine		25		27				34		86
Red pine										
Eastern white pine										
Multiple species[1]						7				7
Total	**152**	**96**	**39**	**44**		**22**		**68**	**41**	**462**

(1) Tree seed orchards where dunkeld larch and tamarack, Norway, white, black and red spruce, as well as jack and Scots pine are found

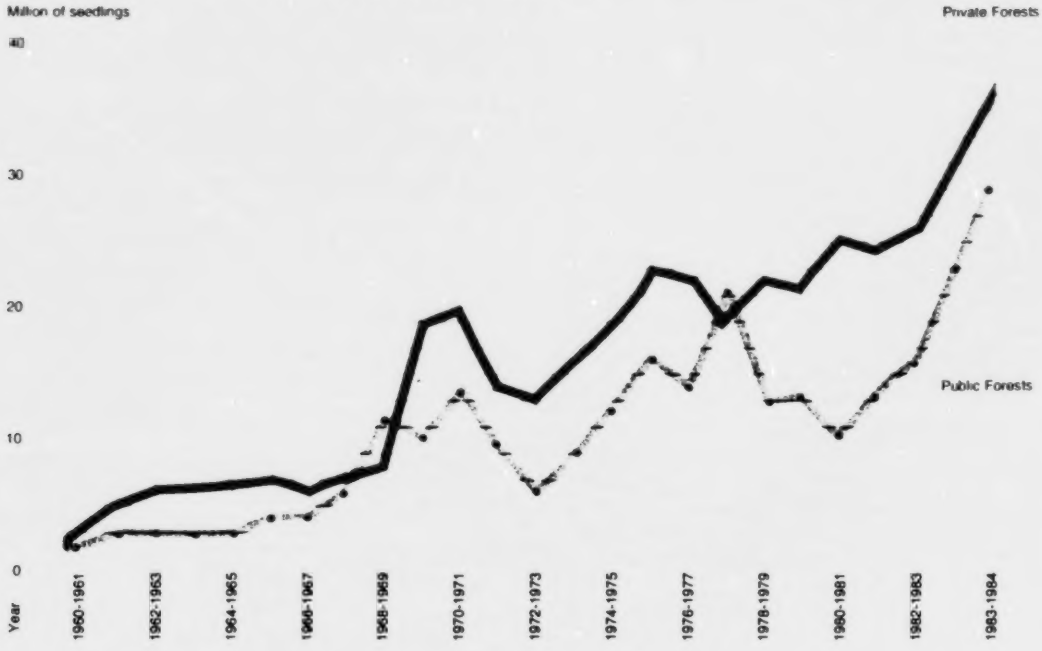
Seedling Production

NURSERY		SEEDLINGS AVAILABLE FOR REFORESTATION ('000)					
		1983-1984			1984-1985		
		Bare root	Potted	Total	Bare root	Potted	Total
Bas-Saint-Laurent — Gaspésie (01)	Saint-Modeste	8 967	—	8 967	8 215	1 147	9 362
Bas-Saint-Laurent — Gaspésie (01)	Sainte-Luce	11 030	—	11 030	10 729	—	10 729
Saguenay — Lac-Saint-Jean (02)	Normandin	4 746	—	4 746	6 003	48	6 051
Québec (03)	Duchesnay	4 637	—	4 637	3 848	—	3 848
Trois-Rivières (04)	Grandes-Piles	4 362	—	4 362	3 200	—	3 200
Trois-Rivières (04)	Victoriaville	—	—	—	620	—	620
Estrie (05)	East-Angus	—	6 826	6 826	—	9 192	9 192
Montréal (06)	Berthierville	6 424	—	6 424	6 836	—	6 836
Abitibi — Témiscamingue (08)	Trécesson	8 430	—	8 430	7 581	—	7 581
Subtotal		**48 596**	**6 826**	**55 422**	**47 032**	**10 387**	**57 419**
Purchases		3 523	3 462	6 985	4 639	11 094	15 733
TOTAL		**52 119**	**10 288**	**62 407**	**51 671**	**21 481**	**73 152**

4 Forest Management

4.4 Reforestation (continued)

Trees Planted
(A) Past Performance by Type of Ownership



B) Trees Planted in 1983-1984, by Region, Type of Ownership, and Species *('000 seedlings)*

		Balsam fir	European larch	Tamarack	Japanese larch	Norway spruce	White spruce	Black spruce	Red spruce	Jack pine	Red pine	White pine	Scots pine	Others	Total
01	PU	—	—	—	—	6	870	6 743	—	91	—	131	—	—	7 841
Bas Saint-Laurent	PR	100	—	134	—	613	4 608	4 564	—	28	—	—	41	30	10 118
— Gaspésie	TL	100	—	134	—	619	5 478	11 307	—	119	—	131	41	30	17 959
02	PU	—	—	—	—	—	—	1 434	—	694	—	—	—	—	2 128
Saguenay —	PR	49	—	—	—	12	899	354	—	775	20	—	23	—	2 132
Lac-Saint-Jean	TL	49	—	—	—	12	899	1 788	—	1 469	20	—	23	—	4 260
03	PU	—	—	—	—	59	279	1 173	1 533	188	—	—	—	—	3 232
Québec	PR	556	—	76	—	880	3 695	751	2 089	234	90	—	14	—	8 385
	TL	556	—	76	—	939	3 974	1 924	3 622	422	90	—	14	—	11 617
04	PU	—	—	—	—	—	—	3 689	—	1 849	—	—	—	—	5 538
Trois-Rivières	PR	134	21	54	—	613	306	163	134	1 020	315	—	126	—	2 886
	TL	134	21	54	—	613	306	3 852	134	2 869	315	—	126	—	8 424
05	PU	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Estrie	PR	776	—	48	—	1 706	768	—	—	—	44	—	73	23	3 438
	TL	776	—	48	—	1 706	768	—	—	—	44	—	73	23	3 438
06	PU	—	—	1	—	5	6	99	—	212	14	1	3	—	341
Montréal	PR	262	8	63	21	108	170	6	9	70	83	112	313	85	1 310
	TL	262	8	64	21	113	176	105	9	282	97	113	316	85	1 651
07	PU	—	—	—	—	5	33	1 172	—	1 140	—	45	—	—	2 395
Outaouais	PR	57	—	103	—	180	455	192	—	683	131	39	123	—	1 963
	TL	57	—	103	—	185	488	1 364	—	1 823	131	84	123	—	4 358
08	PU	—	—	118	—	—	28	932	—	5 950	36	13	—	—	7 077
Abitibi —	PR	—	—	2	—	—	24	—	—	3 861	—	—	—	—	3 887
Témiscamingue	TL	—	—	120	—	—	52	932	—	9 811	36	13	—	—	10 964
09	PU	—	—	—	—	—	46	300	—	—	—	—	—	—	346
Côte-Nord	PR	1	—	1	—	—	65	17	—	3	—	—	—	—	87
	TL	1	—	1	—	—	111	317	—	3	—	—	—	—	433
	PU	—	—	119	—	75	1 282	15 842	1 533	10 124	50	190	3	—	28 898
TOTAL	PR	1 935	29	481	21	4 112	10 986	8 047	2 232	6 674	683	151	713	138	34 296
	TL	1 935	29	600	21	4 187	12 282	21 589	3 765	16 798	733	341	716	138	63 194

* PU = Public forests PR = Private forests TL = Total

4 Forest Management

4.4 Reforestation (continued)

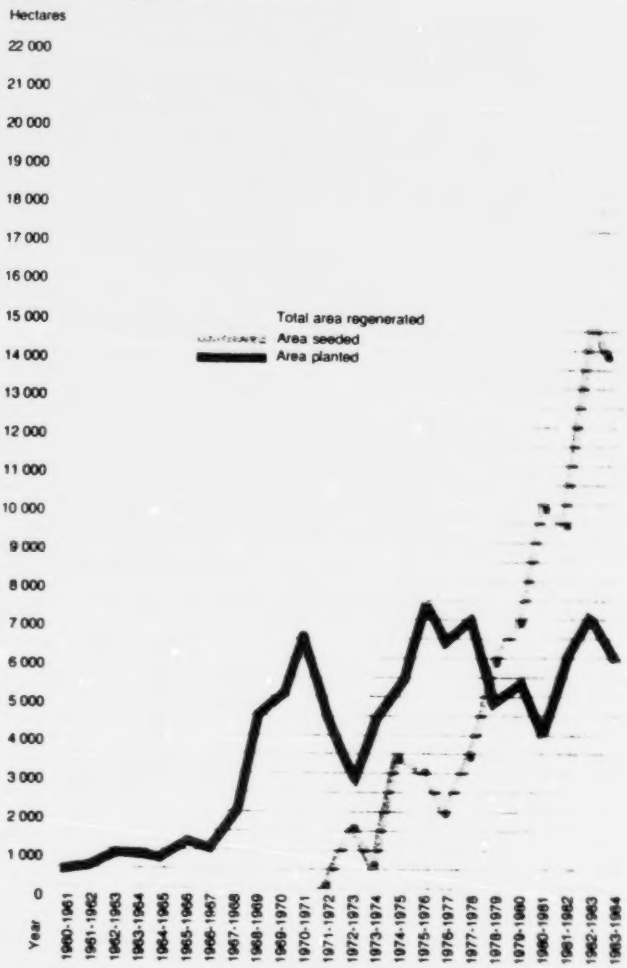
Contribution of Joint Management Organizations to the Reforestation of Private Forests

	1980		1981		1982		1983	
	Total reforestation ('000 of seedlings)	Contribution of J.M.O.* (%)	Total reforestation ('000 of seedlings)	Contribution of J.M.O.* (%)	Total reforestation ('000 of seedlings)	Contribution of J.M.O.* (%)	Total reforestation ('000 of seedlings)	Contribution of J.M.O.* (%)
01 Bas-Saint-Laurent — Gaspésie	5 042	83	6 887	84	7 684	85	10 118	86
02 Saguenay — Lac Saint-Jean	1 547	54	1 791	62	1 587	67	2 132	61
03 Québec	5 047	39	4 679	43	5 513	34	8 385	56
04 Trois-Rivières	3 253	81	2 594	56	2 500	37	2 886	69
05 Estrie	3 428	11	3 109	22	3 602	10	3 438	19
06 Montréal	1 855	7	1 271	16	1 431	5	1 310	8
07 Outaouais	1 571	36	1 818	28	1 771	40	1 963	49
08 Abitibi — Témiscamingue	2 481	75	2 010	71	1 128	90	3 887	84
09 Côte-Nord	0	0	2	0	53	0	87	—
TOTAL	**24 224**	**45**	**24 161**	**55**	**25 270**	**50**	**34 208**	**63**

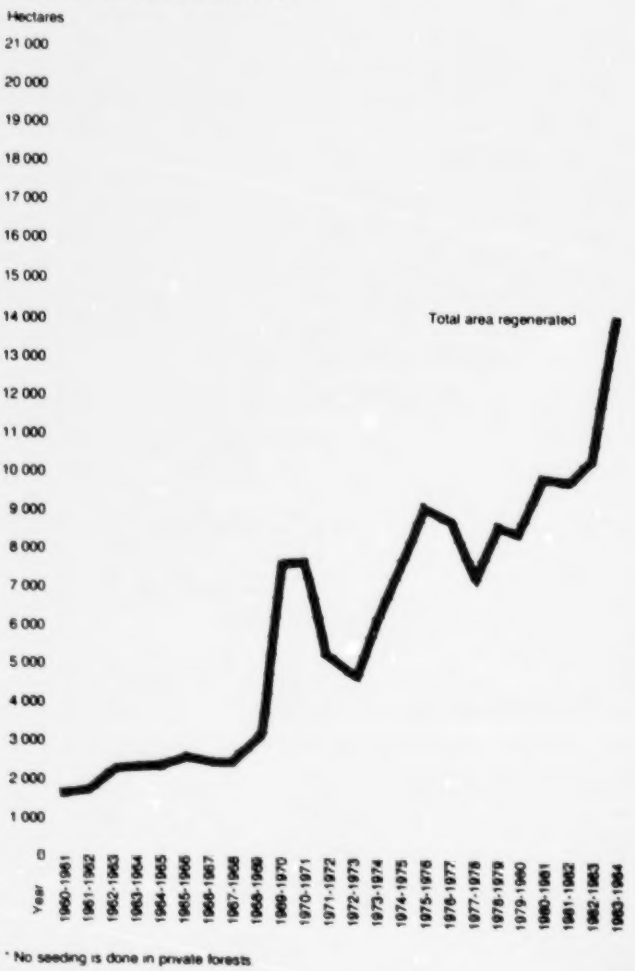
* J.M.O.: Joint management organization

Areas Artificially Regenerated

(A) In Public Forests



*(B) In Private Forests**



* No seeding is done in private forests

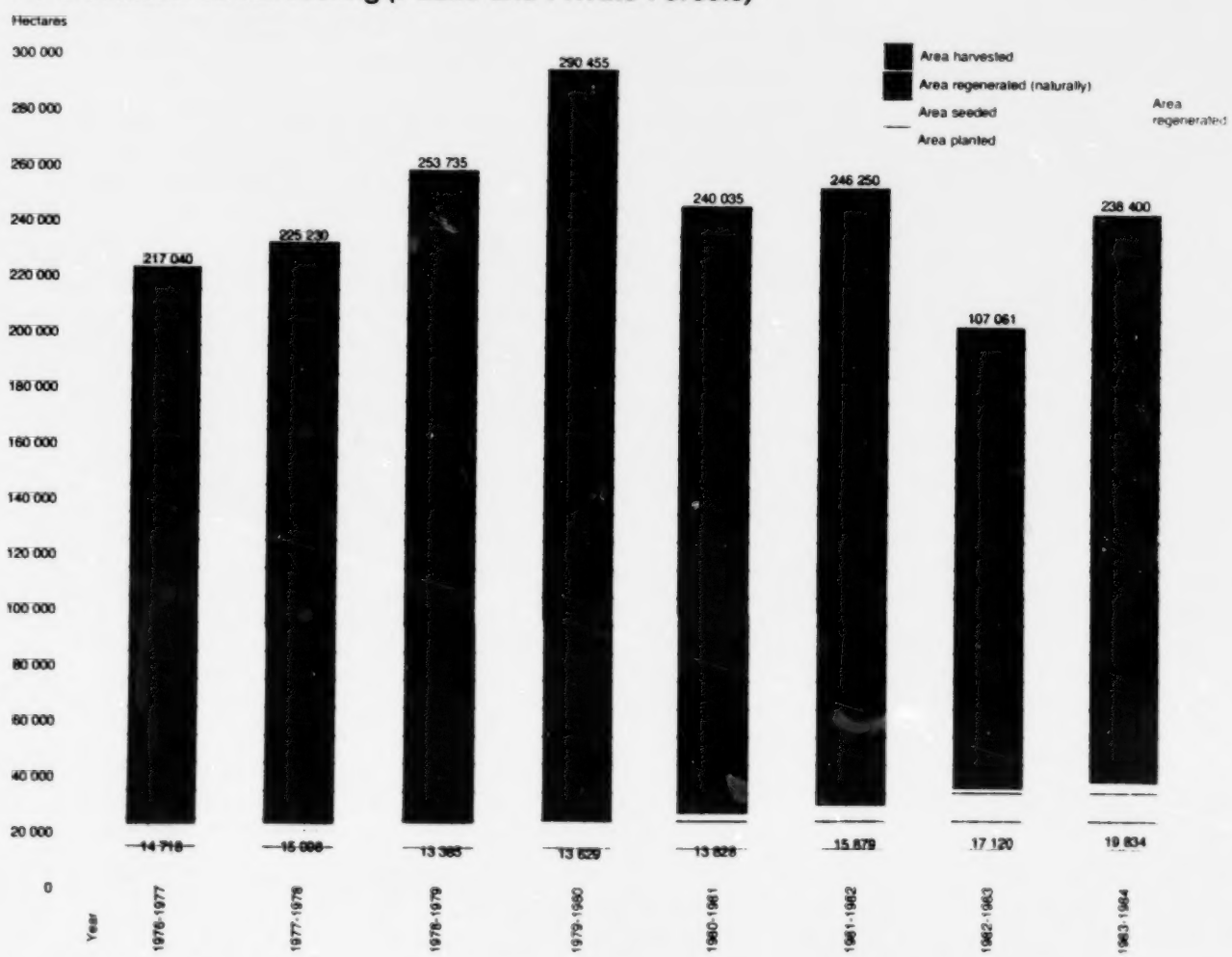
4 Forest Management

4.4 Reforestation (continued)

Related Forestry Works *(hectare)*

	PUBLIC FORESTS			PRIVATE FORESTS			TOTAL		
	Site preparation	Plantation upkeep	Subtotal	Site preparation	Plantation upkeep	Subtotal	Site preparation	Plantation upkeep	Subtotal
1979	5 533	4 449	9 982	1 704	255	1 959	7 237	4 704	11 941
1980	4 872	4 293	9 165	2 248	657	2 905	7 120	4 950	12 070
1981	6 726	2 328	9 054	1 967	1 504	3 471	8 693	3 832	12 525
1982	12 756	2 678	15 434	6 006	2 632	8 638	18 762	5 310	24 072
1983	15 804	3 689	19 493	4 560	3 814	8 374	20 364	7 503	27 867
Average	**9 138**	**3 487**	**12 625**	**3 297**	**1 772**	**5 069**	**12 435**	**5 259**	**17 694**

Reforestation vs Harvesting *(Public and Private Forests)*



4 Forest

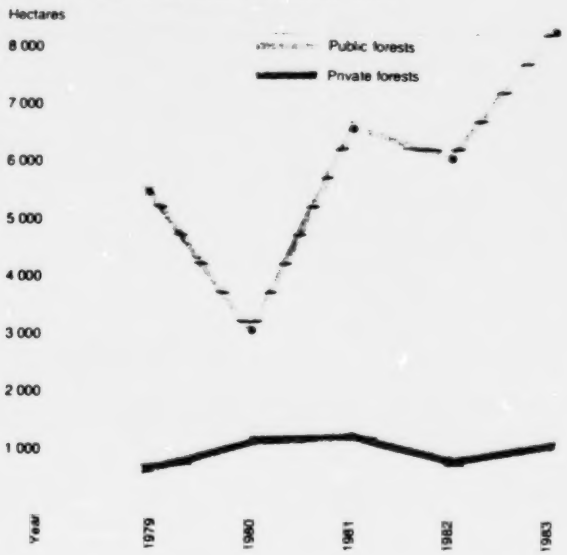
4.5 Other Forest Management Activities

Non-Commercial Treatments *(hectare)*

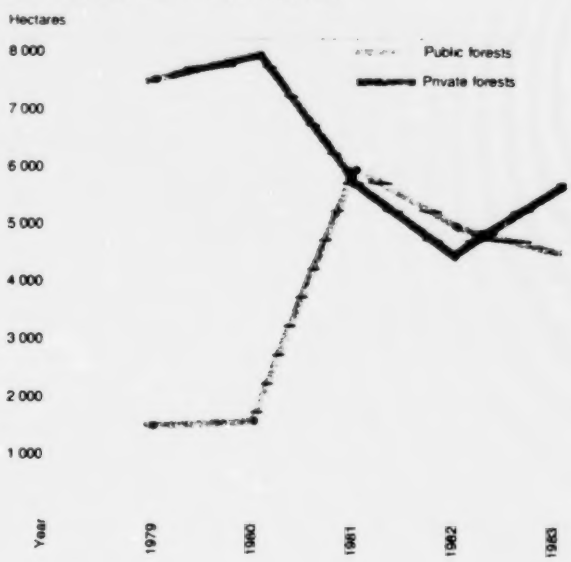
	PUBLIC FORESTS			PRIVATE FORESTS			TOTAL		
	Thinning	Cleaning	Subtotal	Thinning	Cleaning	Subtotal	Thinning	Cleaning	Subtotal
1979	—	—	5 146	72	312	384	72*	312*	5 530
1980	—	—	2 761	288	635	923	288*	635*	3 684
1981	—	—	6 394	182	852	1 034	182*	852*	7 428
1982	2 942	2 883	5 825	212	409	621	3 154	3 292	6 446
1983	1 973	6 039	8 012	195	392	587	2 168	6 431	8 599
Average	**2 458**	**4 461**	**5 628**	**190**	**520**	**710**	**2 648**	**4 981**	**7 629**

* Private forests only

Non-Commercial Treatments



Commercial Treatments



Commercial Treatments *(hectare)**

	PUBLIC FORESTS			PRIVATE FORESTS			TOTAL		
	Strip cutting	Other treatments	Subtotal	Strip cutting	Other treatments	Subtotal	Strip cutting	Other treatments	Subtotal
1979	600	675	1 275	0	7 284	7 284	600	7 959	8 559
1980	1 100	211	1 311	43	7 613	7 656	1 143	7 824	8 967
1981	5 000	699	5 699	31	5 621	5 652	5 031	6 320	11 351
1982	4 400	334	4 734	40	4 203	4 243	4 440	4 537	8 977
1983	3 716	591	4 307	24	2 040	2 064	3 740	2 631	6 371
Average	**2 963**	**502**	**3 465**	**28**	**5 362**	**5 380**	**2 991**	**5 864**	**8 845**

* Excluding clear cutting and salvage cutting

5 Logging

5.1 Economic Indicators

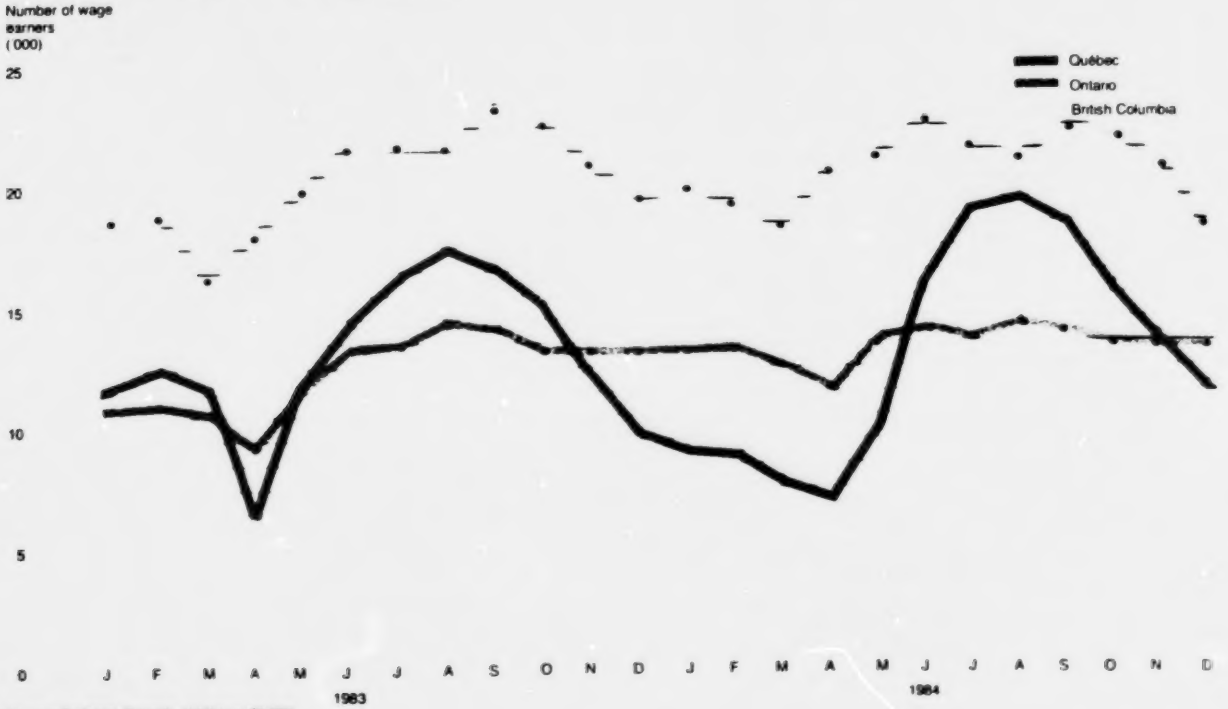
Evolution of Economic Indicators *(Logging)*

	Total number of employees*	Wages '000 $	Value of shipments '000 $	Added value '000 $
1963	22 449	88 918	227 504	122 200
1964	22 561	95 377	241 593	126 484
1965	20 803	95 256	243 876	135 661
1966	22 189	114 908	282 104	158 699
1967	20 842	120 051	315 979	166 252
1968	16 868	104 877	319 344	152 501
1969	16 309	111 338	327 920	166 786
1970	14 815	109 057	329 026	161 089
1971	12 521	100 457	302 489	145 172
1972	12 364	108 219	309 864	166 474
1973	14 690	135 695	345 759	210 848
1974	11 115	172 363	433 527	267 792
1975	17 288	207 430	475 720	308 411
1976	13 135	179 866	507 331	277 526
1977	11 834	182 741	546 215	284 987
1978	11 959	198 911	583 801	324 008
1979	13 065	236 884	703 867	356 323
1980	11 575	221 552	695 183	347 611
1981	11 257	253 810	841 651	398 417
1982	8 994	204 828	777 350	317 680

* These figures cover all employees whereas other statistics include only production workers.

Sources: 1963 to 1971 — Adaptation of statistics from the B.S.Q.
1971 to 1982 — Statistics Canada, catalogue 25-201

Curve of Employment in the Logging Industry *(January 1983 to December 1984)*



Source: Statistics Canada, catalogue 72-002

5 Logging

5.2 Productivity

Employment vs Volumes of Wood Harvested

	Employment Distribution %		Harvest Distribution %	
	1981-1982	1982-1983	1981-1982	1982-1983
01 Bas-Saint-Laurent — Gaspésie	24	25	14	13
02 Saguenay — Lac-Saint-Jean	21	23	23	22
03 Québec	12	9	11	11
04 Trois-Rivière	7	6	10	8
05 Estrie	2	2	2	3
06 Montréal	5	6	5	6
07 Outaouais	8	10	8	6
08 Abitibi — Témiscamingue	8	10	19	24
09 Côte-Nord	13	9	8	7
TOTAL	**100**	**100**	**100**	**100**

Source Employment distribution Statistics Canada, catalogue of economic indicators

Yield *(in m³)* in Relation to the Number of Hours Worked *(production only)*

	Québec		British Columbia		Ontario		New Brunswick	
	m³/h	(%) *	m³/h	(%) *	m³/h	(%) *	m³/h	(%) *
1977	1.57	(100)	2.02	(100)	1.52	(100)	1.23	(100)
1978	1.70		1.93		1.22		1.10	
1979	1.60		1.85		1.28		1.10	
1980	1.67		1.86		1.27		1.16	
1981	1.87		1.94		1.52		1.23	
1982	2.17	(138)	2.18	(108)	1.74	(114)	1.28	(104)

* Index 1977 100%

Source Statistics Canada, catalogue 25-201

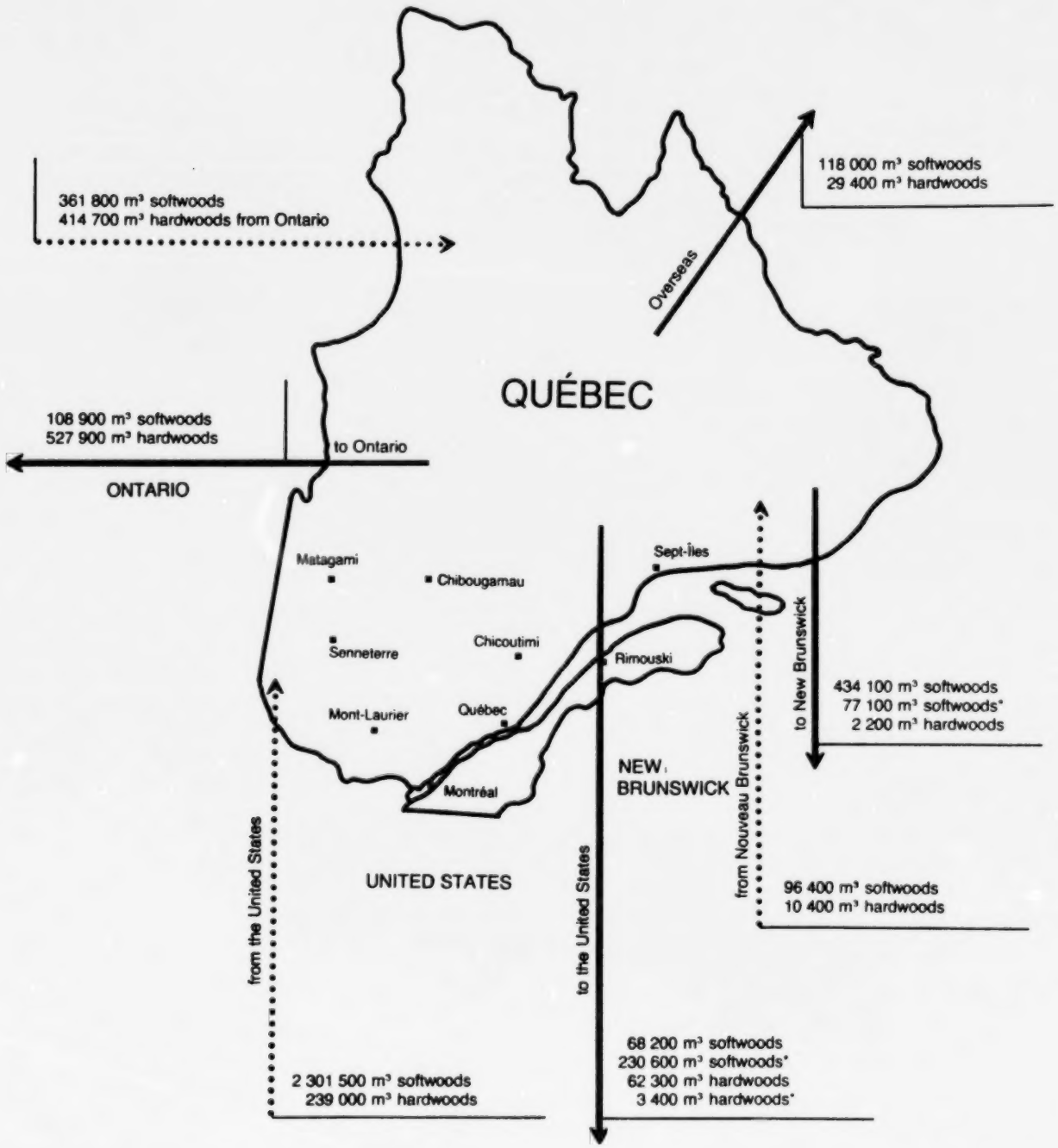
Added Value in Relation to the Number of Hours Worked *(in current dollars)*

	Québec		British Columbia (Coast and Interior)		Ontario		New Brunswick	
	v.a./h	$/h	v.a./h	$/h	v.a./h	$/h	v.a./h	$/h
1977	280 752/ 19 667	= 14.27	679 548/ 33 416	= 20.3	195 277/ 12 802	= 15.25	73 803/ 6 868	= 10.71
1978	318 045/ 19 976	= 15.9	842 135/ 38 917	= 21.6	251 259/ 16 582	= 15.17	87 544/ 7 729	= 11,3
1979	353 210/ 22 211	= 15.9	1 158 820/ 41 178	= 28.14	276 600/ 16 572	= 16.69	107 440/ 7 933	= 13.5
1980	343 465/ 18 882	= 18.1	1 015 963/ 40 123	= 25.3	316 822/ 16 692	= 18.9	112 187/ 7 220	= 15.5
1981	391 568/ 18 223	= 21.4	861 538/ 31 203	= 27.6	319 199/ 14 979	= 21.3	113 199/ 6 292	= 17.9
1982	310 982/ 13 413	= 23.2	786 961/ 25 835	= 30.5	283 106/ 11 370	= 24.9	82 707/ 4 928	= 16.8

Source Statistics Canada, catalogue 25-201

6 Movement of Roundwood and Chips

6.1 Imports and Exports in 1980



* Wood fiber in transit: roundwood imported and sawn in Québec before being returned in its country of origin or chips produced from roundwood imported and returned to its points of origin.

6 Movement of Roundwood and Chips

6.2 Joint Products Used by the Pulp and Paper Industry

A. Interregional Movements (%)

	Roundwoods (pulp)		Chips		Sawdust and Shavings	
	Utilization	Production	Utilization	Production	Utilization	Production
01 — Bas-Saint-Laurent — Gaspésie	13,9	14,7	5,2	5,2	22,8	18,0
02 — Saguenay — Lac-Saint-Jean	15.5	18.9	27.7	30.4	7.8	22.4
03 — Québec	16.6	15.8	10.3	8.1	6.6	8.7
04 — Trois-Rivières	21.5	8.6	23.6	2.3	43.2	8.5
05 — Estrie	5.8	4.7	4.2	2.0	10.3	6.9
06 — Montréal	0.1	2.4	0.4	2.4	0.6	2.3
07 — Outaouais	16.4	14.4	8.9	2.7	1.6	0.1
08 — Abitibi — Témiscamingue	4.1	6.8	16.0	37.1	5.8	25.9
09 — Côte-Nord	6.1	11.4	3.7	3.7	1.3	1.3
Other provinces	—	1.5	—	5.9	—	5.9
United States	—	0.8	—	0.2	—	—
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

B. Trade Balance of Interregional Exchanges

	Roundwoods (pulp) (m^3)			Chips (oven-dry metric tonnes)			Sawdust and Shavings (oven-dry metric tonnes)		
	Export	Import	Balance [1]	Export	Import	Balance [1]	Export	Import	Balance [1]
01 — Bas-Saint-Laurent — Gaspésie	266 537	157 134	109 403	11 350	14 445	(3 095)	—	32 114	(32 114)
02 — Saguenay — Lac-Saint-Jean	590 947	140 899	450 048	191 968	83 316	108 652	96 886	—	96 886
03 — Québec	774 749	894 328	(119 579)	170 486	258 069	(87 583)	13 746	—	13 746
04 — Trois-Rivières	32 321	1 742 706	1 710 385	2 128	834 283	(832 155)	—	229 992	(299 992)
05 — Estrie	90 206	243 239	(153 033)	552	88 906	(88 354)	—	22 543	(22 543)
06 — Montréal	318 846	—	318 046	84 745	3 795	80 950	11 270	—	11 270
07 — Outaouais	18 534	290 712	(272 178)	14 106	257 394	(243 288)	—	9 875	(9 875)
08 — Abitibi — Témiscamingue	390 990	29 516	361 474	883 224	58 937	824 287	133 106	—	133 106
09 — Côte-Nord	829 582	123 461	706 121	1 912	—	1 912	—	—	—
Total	**3 312 712**	**3 621 995**	**(310 083)[2]**	**1 360 471**	**1 599 145**	**(238 674)[2]**	**255 008**	**294 524**	**(39 516)[2]**

(1) Parentheses are used to indicate imports in excess of exports

(2) Includes wood imported from the United States and Ontario

Source Data compiled by the M E R in a document titled *Bois ronds, copeaux, sciures et planures reçus en 1981 par les industries des pates et papiers.*

7 The Wood Industry

7.1 Overview

Wood Processing Mills *(January 1985)*

	01	02	03	04	05	06	07	08	09	Total
Lumber	**212**	**106**	**272**	**103**	**107**	**184**	**121**	**83**	**42**	**1 309**
On a service basis	106	46	116	60	50	86	64	39	17	584
On a commercial basis	106	59	156	43	57	98	57	44	25	645
— Less than 2 000 m³/year	66	22	88	27	38	66	41	18	22	388
— Between 2 000 and 10 000 m³/year	18	17	39	13	12	28	7	3	1	138
— Between 10 000 and 20 000 m³/year	5	4	8	—	1	3	5	4	1	31
— Between 20 000 and 50 000 m³/year	12	4	13	1	5	—	2	7	—	44
— More than 50 000 m³/year	5	12	8	2	1	1	2	14	1	46
Chips	**35**	**40**	**86**	**19**	**23**	**38**	**20**	**34**	**5**	**279**
Main Production	1	1	3	3	3	2	1	1	—	15
Secondary Production	34	39	82	16	20	36	19	33	5	264
Lathe	**26**	**2**	**3**	**—**	**3**	**—**	**—**	**2**	**—**	**36**
Main Production	8	—	1	—	—	—	—	—	—	9
Secondary Production	18	2	2	—	3	—	—	2	—	27
Shingles	**23**	**2**	**25**	**2**	**8**	**7**	**5**	**4**	**—**	**76**
Main Production	11	1	14	2	5	4	1	3	—	41
Secondary Production	12	1	11	—	3	3	4	1	—	35
Veneers and Plywood	**—**	**—**	**6**	**10**	**2**	**12**	**5**	**5**	**—**	**40**
Peeling, Slicing	—	—	1	5	2	4	4	5	—	21
Assembling and Wood Veneer only	—	—	5	5	—	8	1	—	—	19
Sash, Doors and other Millwork(1)	**24**	**28**	**85**	**39**	**14**	**124**	**15**	**5**	**2**	**336**
Hardwood Flooring(1)	**—**	**—**	**3**	**1**	**2**	**1**	**1**	**8**	**8**	**8**
Prefabricated Buildings (frames)(1)	**—**	**5**	**10**	**1**	**—**	**18**	**2**	**3**	**—**	**39**
Wooden Kitchen Cabinets(1)	**3**	**18**	**32**	**26**	**8**	**71**	**8**	**2**	**2**	**170**
Wooden Boxes(1)	**—**	**1**	**4**	**9**	**4**	**29**	**—**	**—**	**—**	**47**
Coffins and Caskets(1)	**—**	**—**	**4**	**7**	**1**	**1**	**—**	**—**	**—**	**13**
Treated Wood	**1**	**—**	**1**	**—**	**—**	**4**	**1**	**1**	**—**	**8**
Wooden Handles and Turnery Wood(1)	**—**	**—**	**8**	**5**	**3**	**7**	**—**	**—**	**—**	**23**
Particle Boards (M.E.R. and C.R.I.Q.)	**1**	**—**	**2**	**3**	**—**	**3**	**2**	**3**	**—**	**14**
Posts	**—**	**—**	**2**	**—**	**—**	**1**	**1**	**1**	**—**	**5**
Spoolwood	**1**	**1**	**6**	**—**	**5**	**3**	**—**	**—**	**—**	**16**
Main Production	—	1	2	—	—	2	—	—	—	5
Secondary Production	1	—	4	—	5	1	—	—	—	11
Charcoal	**3**	**—**	**43**	**2**	**—**	**—**	**2**	**1**	**—**	**51**
Integrated Mills (including drying)	2	—	3	2	—	—	1	1	—	9
Kilns only	1	—	40	—	—	—	1	—	—	42
Essential Oils	**2**	**1**	**5**	**—**	**2**	**1**	**—**	**1**	**—**	**12**
Firewood (more than 500 m³/year)	**8**	**2**	**19**	**22**	**1**	**37**	**9**	**4**	**1**	**103**
Main Production	7	—	11	19	1	36	9	3	1	87
Secondary Production	1	2	8	3	—	1	—	1	—	16
Total Production Units(2)	**339**	**205**	**595**	**249**	**183**	**521**	**192**	**149**	**52**	**2 485**
%	**13.6**	**8.2**	**24.0**	**10.0**	**7.4**	**21.0**	**7.7**	**6.0**	**2.1**	**100.0**
Actual Number of Mills	**273**	**161**	**506**	**230**	**152**	**480**	**169**	**112**	**47**	**2 132**
%	**12.8**	**7.6**	**23.8**	**10.8**	**7.1**	**22.5**	**7.9**	**5.3**	**2.2**	**100.0**

(1) Data from the Centre de recherche industrielle du Québec (C.R.I.Q.)
(2) Mills producing several categories of products are included in each of these categories.
Sources: M.E.R. and C.R.I.Q.

7 The Wood Industry

7.1 Overview (continued)

Economic Indicators by Industry or Major Group *(Wood Industry, Group 08)*

	Employees		Wages ('000 $)		Value of shipments ('000 $)		Added value ('000 $)	
	1981	1982	1981	1982	1981	1982	1981	1982
Shingle mills (2511)	230	210	3 532	3 062	8 800	7 905	4 875	4 108
Sawmills and planing mills (2513)	15 477	12 411	257 470	221 394	1 033 660	892 921	433 614	354 166
Veneer and plywood mills (252)	1 715	1 782	24 761	26 680	136 612	134 108	50 654	49 665
Sash, doors, flooring and other millwork plants NCA (2541 and 2542)	4 596	4 025	68 934	61 888	276 287	242 061	121 414	102 326
Prefabricated buildings — wood frames (2543)	968	612	15 402	9 650	130 939	42 496	68 474	15 832
Wooden kitchen cabinets manufactures (2544)	1 794	1 563	25 566	23 391	85 810	77 022	40 252	35 975
Wooden boxes and pallet factories (2580)	851	779	11 308	10 998	40 550	38 254	18 577	17 142
Coffins and caskets industry (2580)	440	466	6 979	7 714	21 031	23 748	11 534	12 771
Miscellaneous wood industries (2590)	1 903	1 780	29 982	29 145	124 477	124 115	58 321	51 400
Total	**27 976**	**23 608**	**443 934**	**393 922**	**1 828 164**	**1 582 630**	**807 715**	**642 885**

Source: Statistics Canada, catalogue 31-203

Capital Expenditures *('000 $)*

	1970	1980	1981	1982	1983[1]	1984[1]
Wood Industry (Group 08)	19 400	68 500	63 400	37 000	35 300	54 600

(1) Provisory actual expenditures

(2) Revised forecast

Source: Statistics Canada, catalogue 61-206

Productivity *(Wood Industry)*

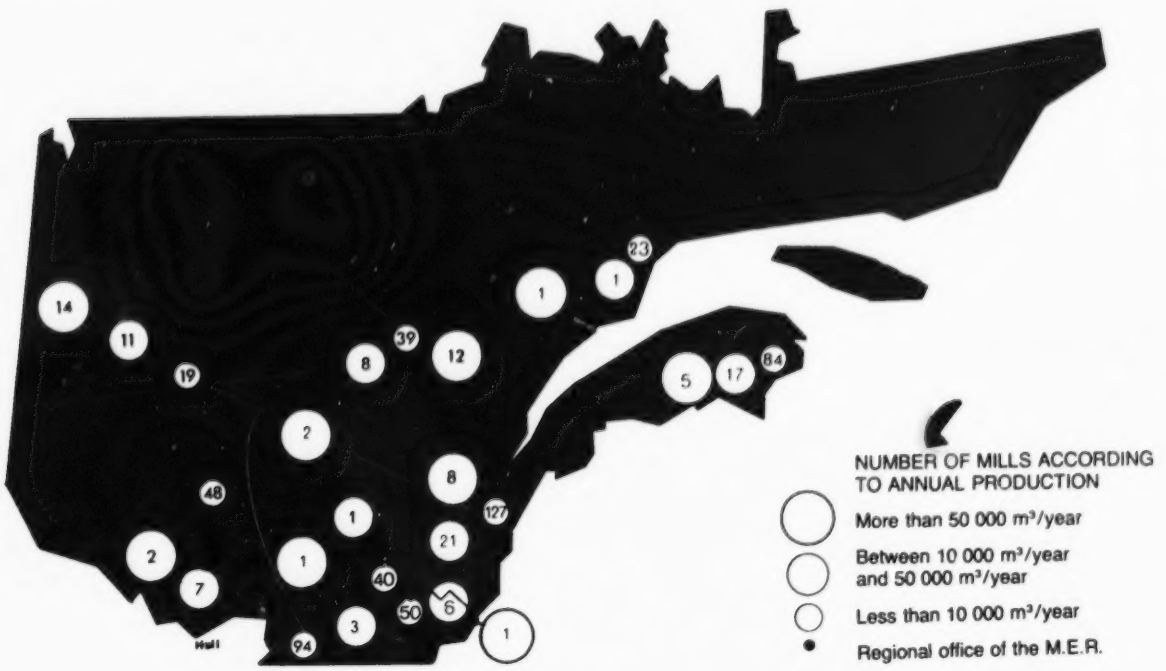
	1977	1978	1979	1980	1981	1982
Value added per hour worked (in current dollars)	10.89	12.41	15.22	14.11	16.57	15.98
Productivity Manufacturing activity	15.46	17.48	19.86	22.82	25.60	26.46
Ratio between sectorial productivity and overall manufacturing productivity	0.70	0.71	0.77	0.62	0.65	0.60

Source: Statistics Canada, catalogue 31-203

7 The Wood Industry

7.2 The Sawmill Industry

Sawmills Operating on a Commercial Basis



Sources of Wood Used in Sawmills *('000 m³)*

Source	1970	1975	1980	1981	1982	1983
Public Forests	5 817	10 129	14 641	15 271	13 024	16 232
Private Forests	1 266(e)	923(e)	1 519	1 584	1 879	2 365
Imports	2 510	2 464	3 029	2 400(e)	2 400(e)	2 400(e)
Total	**9 593**	**13 516**	**19 189**	**19 255**	**17 303**	**20 997**

(e) Estimated data

Sources: Statistics Canada, catalogue 65-203 and M.E.R. (internal compilation)

Lumber Shipments *('000 m³)*

Species	1970	1975	1980	1981	1982	1983	1984
Softwoods	3 090	4 334	7 012	6 947	5 956	8 187	8 300
Hardwoods	528	383	370	298	206	323	500
Total	**3 518**	**4 717**	**7 382**	**7 245**	**6 162**	**8 510**	**8 800**

(e) Estimated data
(p) Preliminary

Sources: Statistics Canada, catalogue 35-002 and 35-204
Association des manufacturiers de bois de sciage du Québec (A.M.B.S.Q.)

Shingles Shipments *(toise*)*

	1975	1980	1981	1982	1983	1984
Shingles	250 000	350 000	398 750	300 000	315 741	334 500

* 1 toise = 9,3 m²

(e) Estimated data

Source: Association des manufacturiers de bois de sciage du Québec (A.M.B.S.Q.)

7 The Wood Industry

7.2 The Sawmill Industry (continued)

Shipments of Related Products *(oven-dry metric tonnes)*

	1975	1980	1981	1982	1983	1984 e
Chips	2 304 300	3 642 783	3 530 253	3 412 728	4 411 440	4 275 000
Sawdust and shavings	599 100	970 000	940 900	912 675	998 895	968 928
Bark	691 100	1 021 000	995 370	967 509	1 154 200	1 118 574
Total	**3 594 400**	**5 633 378**	**5 466 523**	**5 292 912**	**6 564 535**	**6 362 502**

(e) Estimate

Source: Association des manufacturiers de bois de sciage du Québec (A.M.B.S.Q.)

Destination of Lumber Shipments *(%)*

First destination	1970	1975	1980	1981	1982	1983	1984 e
Québec	36	31	15	14	12	13	15
Ontario	39	37	19	20	19	18	19
United States							
Northeast	24	27	30	25	23	24	23
North Central	—	3	20	22	20	22	21
South	—	—	4	9	14	15	15
Overseas							
Europe	—	—	6	3	3	3	—
Middle East	1	2	4	5	5	4	7
North Africa			1	2	4	1	
West Indies	—	—	1	—	—	—	—
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

(e) Estimate

Source: Association des manufacturiers de bois de sciage du Québec (A.M.B.S.Q.)

Conversion Ratio *(lumber/roundwood)* and Productivity *(m^3/hour worked)*

	QUÉBEC		ONTARIO		BRITISH COLUMBIA		CANADA	
	Ratio (%)	Productivity (m^3/h worked)	Ratio (%)	Productivity (m^3/h worked)	Ratio (%)	Productivity (m^3/h worked)	Ratio (%)	Productivity (m^3/h worked)
1961	47.8	0.18	41.7	0.18	36.0	0.33	38.1	0.26
1965	33.3	0.16	33.4	0.16	39.9	0.34	37.8	0.26
1970	37.0	0.19	33.3	0.17	38.3	0.38	37.7	0.29
1975	40.3	0.23	35.9	0.19	43.1	0.39	42.0	0.31
1980	36.5	0.25	29.7	0.24	41.6	0.41	38.7	0.33
1981	39.3	0.27	34.8	0.26	43.1	0.46	41.2	0.37
1982	41.7	0.29	35.8	0.29	42.8	0.51	41.4	0.41
1983	38.4	0.31	35.3	0.31	43.3	0.58	41.0	0.46

Source: Statistics Canada, catalogue 35-204

Comparative Evolution of Chips and Lumber Shipments

	Québec			Canada		
	Lumber (1) nominal '000 m^3	Chips (1) '000 o.m.t. (2)	Chips/Lumber o.m.t./m^3 (2)	Lumber (1) nominal '000 m^3	Chips (1) '000 o.m.t. (2)	Chips/Lumber o.m.t./m^3 (2)
1970	3 518	994	0.283	25 861	6 483	0.251
1975	4 717	1 830	0.388	25 917	8 801	0.340
1980	7 383	3 643	0.493	40 348	15 899	0.394
1981	7 245	3 530	0.487	39 180	14 216	0.363
1982	6 162	3 107	0.504	35 079	12 829	0.366
1983	7 967	3 424	0.430	44 772	14 962	0.334

(1) Chips and Lumber Shipments by Sawmill

(2) Oven-dry metric tonnes

Source: Statistics Canada, catalogue 35-204

7 The Wood Industry

7.2 The Sawmill Industry (continued)

Evolution of Average Gross Volume per Stem of Softwood Harvested by Sawmills on Public Forests *(Balsam Fir, Spruce and Jack Pine Scaled in Tree Length)*

	1976-1977 dm^3	1977-1978 dm^3	1978-1979 dm^3	1979-1980 dm^3	1980-1981 dm^3	1981-1982 dm^3	1982-1983 dm^3	1983-1984 dm^3
01 — Bas-Saint-Laurent — Gaspésie	199	206	165	143	136	148	162	159
02 — Saguenay — Lac-Saint-Jean	170	166	159	151	145	148	146	142
03 — Québec	183	154	151	145	141	139	132	161
04 — Trois-Rivières	182	184	190	203	205	169	193	167
05 — Estrie	—	—	—	—	—	—	—	—
06 — Montréal	217	303	241	257	219	211	185	184
07 — Outaouais	205	170	203	211	160	157	232	157
08 — Abitibi — Témiscamingue	171	169	169	161	154	147	145	140
09 — Côte-Nord	291	183	199	188	195	194	192	147
Weighted Average	**173**	**170**	**164**	**158**	**153**	**150**	**149**	**143**

7 The Wood Industry

7.3 Economic Indicators

Evolution of Economic Indicators *(Sawmills and Planing Mills)*(1)

	Total number of employees*	Wages '000 $	Value of shipments '000 $	Added value '000 $
1961	7 940	21 127	88 714	37 454
1962	8 634	24 784	97 630	45 369
1963	9 070	27 960	109 465	50 212
1964	9 110	28 546	115 683	54 885
1965	9 389	31 878	126 667	58 256
1966	8 609	31 388	129 966	56 291
1967	9 505	37 455	143 216	65 524
1968	9 549	40 107	167 536	71 535
1969	9 965	44 111	181 755	84 321
1970	9 039	42 501	168 755	73 211
1971	9 311	48 317	205 103	87 068
1972	11 187	64 894	303 537	148 336
1973	12 948	84 148	392 460	214 138
1974	12 444	96 133	380 876	191 697
1975	11 371	102 965	364 544	180 023
1976	12 311	128 156	454 259	214 595
1977	13 330	153 966	577 447	279 730
1978	15 833	202 631	761 602	381 782
1979	16 472	231 709	945 537	520 582
1980	16 140	252 133	926 534	449 854
1981	15 477	257 470	986 199	433 614
1982	12 411	221 394	871 162	354 166
1983	14 873	282 011	1 166 520	505 632

* This category includes all employees whereas other statistics include only production workers

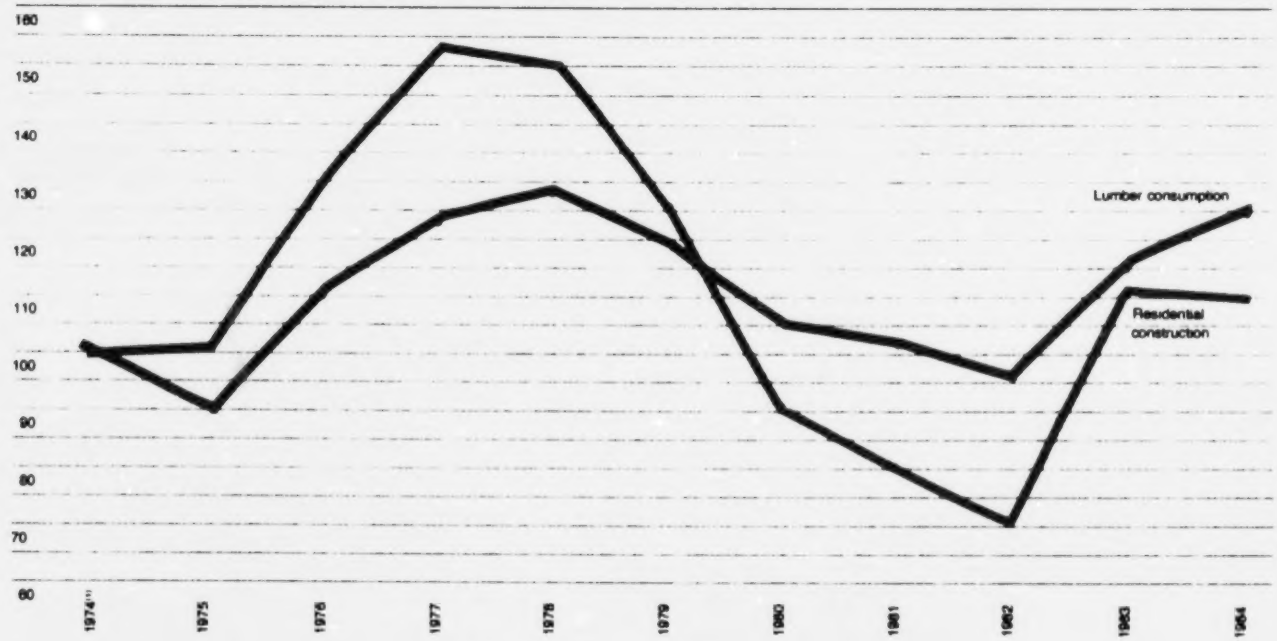
(1) Sawmills and planing mills represent only part of the activity of group 08 mills (wood industry)

Sources: 1961 to 1971 Adaptation of Statistics from the B.S.Q.
1971 to 1983 Statistics Canada, catalogue 35-204

7 The Wood Industry

7.3 Economic Indicators

Comparative Evolution of Lumber Consumption and Residential Construction in North America



(1) Index: 1974 = 100

Sources: Data Resources. *Forsim Review*
Canadian Forestry Service. *Selected Forestry Statistics, Canada 1984 (E-X32)*
The National Association of Home Builders. *Housing Starts Bulletin*, January 1985
Canada Mortgage and Housing Corporation

7 The Wood Industry

7.4 The Veneer and Plywood Industry

Hardwood Veneer and Plywood* Shipments

	Veneer			Plywood			Total		
	1980	1981	1982	1980	1981	1982	1980	1981	1982
Québec ('000 m²)	43 666	52 235	51 377	9 550	7 304	6 618	53 216	59 539	57 995
Ontario ('000 m²)	55 297	58 195	49 069	18 972	20 889	16 474	74 192	74 269	65 543
Canada ('000 m²)	99 745	110 430	101 076	32 095	31 168	25 593	131 840	141 598	126 669
Québec/Canada (%)	43.8	47.3	50.8	29.8	23.4	25.9	40.4	42.0	45.8
Ontario/Canada (%)	55.4	52.7	48.6	59.1	67.0	64.4	56.3	55.9	51.7

* With respect to boards, veneer and plywood, quantities are given in surface measurements (m²), for a standard thickness of 6 mm (1/4 inch).

Sources: Statistics Canada, catalogue 35-206
Statistics Canada, special compilation by province

Evolution of Economic Indicators *(Veneer and Plywood)*

	Total number of employees*	Wages '000 $	Value of shipments '000 $	Added value '000 $
1961	2 254	6 384	22 443	10 578
1962	2 610	7 830	28 424	14 037
1963	2 759	8 591	31 930	15 682
1964	2 929	9 440	33 759	17 674
1965	3 294	11 114	39 813	19 603
1966	3 049	11 207	38 144	18 475
1967	2 785	11 201	38 261	18 202
1968	2 881	11 935	42 734	20 212
1969	2 853	12 737	43 183	22 472
1970	2 362	11 335	28 355	17 762
1971	2 377	12 716	42 830	20 591
1972	2 639	14 939	55 801	27 992
1973	2 928	17 613	72 121	34 284
1974	2 684	20 748	79 252	42 518
1975	2 589	24 603	85 748	38 543
1976	2 589	24 603	85 748	38 543
1977	2 731	28 285	91 079	41 625
1978	2 457	28 018	117 924	57 496
1979	2 081	25 773	108 545	55 593
1980	1 991	27 736	107 565	53 832
1981	1 715	24 761	106 377	50 654
1982	1 762	26 680	104 874	49 165

* This category includes all employees whereas other statistics include only production workers.

Sources: 1961 to 1971 Adaptation of statistics from the B.S.Q.
1971 to 1982 Statistics Canada Catalogue, 35-206.

7 The Wood Industry

7.5 Miscellaneous

The Reconstituted Board Industry

Products	Number of mills	Production capacity (m^3/year)	Employees
Waferboard	3	301 200	235
Particle board	4	525 300	592
Low-density board	3	410 000	449
Total	**10**	**1 236 500**	**1 276**

Source: M.E.R., Repertoire des fabricants de panneaux à base de fibres de bois au Québec, 1985

The Wood Preserving Industry

	Number of establishments	Number of employees	Production (m^3)
1980	4	180	147 245
1982	4	180	186 268
1984(e)	5	200	241 140

(e) Estimate

Source: Survey of the M.E.R., 1984

Charcoal Industry

Number of establishments	Number of employees	Production capacity (m/t)			Production (m/t)			Value of shipments ('000 $)
		Charcoal	Briquets	Total	Charcoal	Briquets	Total	
8	60	15 600	10 500	26 100	7 300	2 700	10 000	3 500

Source: Survey of the M.E.R., 1984

The Firewood Industry*

Year	Total number of households in Québec	Households utilizing wood		Annual volume per household			Tonnes/year
		Number	%	16' cords	m^3	m^3/year	density 0,55
1980	1 625 000	162 500	10	3,0	2,4	390 000	214 500
1990	1 755 000	263 500	15	3,5	2,9	763 425	420 000

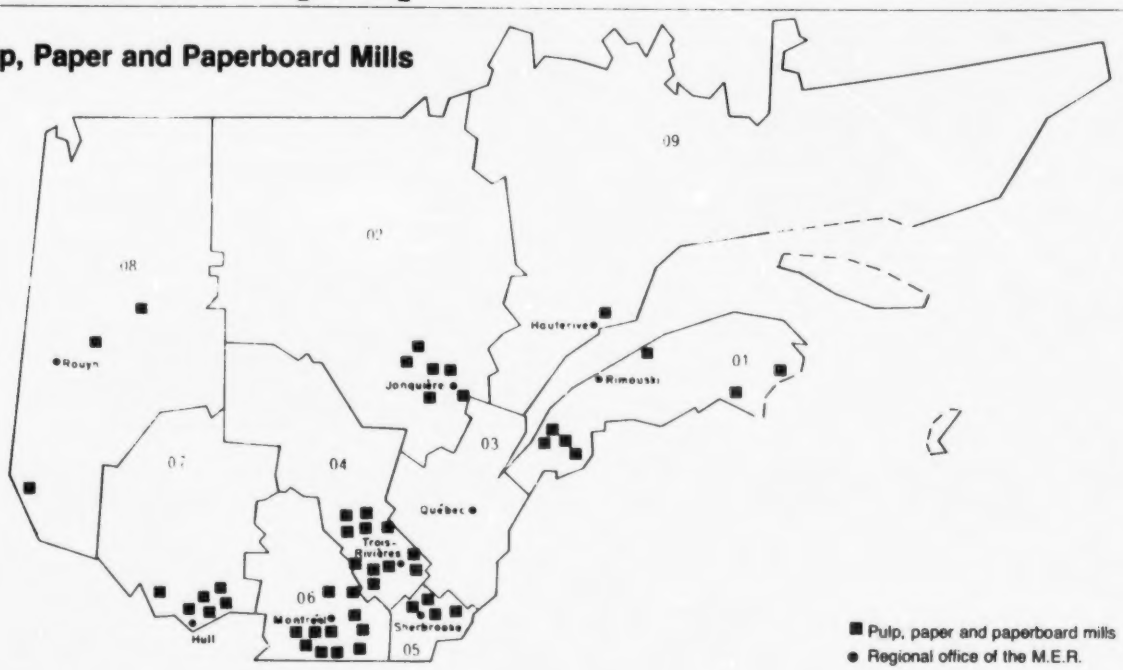
* Estimate

Source: Canadian Forestry Services (ENFOR) *Perspectives d'utilisation de la biomasse forestière au Québec*, Québec, 1982

8 The Pulp and Paper Industry

8.1 Production Capacity

Pulp, Paper and Paperboard Mills



Pulp and Paper Mills *(January 1985)*

	The M.E.R.'s Administrative Regions									
	01	02	03	04	05	06	07	08	09	Total
Pulp and Paper Mills	**7**	**6**	**8**	**11**	**4**	**11**	**6**	**3**	**1**	**57**
% by region	12.3	10.5	14.0	19.3	7.0	19.3	10.5	5.3	1.8	100.0
Using roundwood and chips	7	6	7	7	3	2	5	3	1	41
Using purchased or recycled pulp, or fibers other than wood	—	—	1	4	1	9	1	—	—	16
Number of Producers by Product*	**7**	**8**	**12**	**16**	**7**	**14**	**7**	**3**	**1**	**75**
Newsprint and specialty papers	2	4	4	5	1	—	2	1	1	20
Fine and special papers	—	—	1	—	1	3	1	—	—	6
Tissue paper	—	—	1	2	1	3	1	—	—	8
Commercial pulp	2	3	1	1	1	—	2	2	—	12
Kraft paper and paperboard	1	1	1	2	2	1	—	—	—	8
Paperboard	2	—	1	3	1	4	—	—	—	11
Building materials	—	—	3	3	—	3	1	—	—	10

* One plant may manufacture several different products.

Annual Production Capacity by Product *('000 t)*

	The M.E.R.'s Administrative Regions									
	01	02	03	04	05	06	07	08	09	Total
Newspaper and specialty papers	457	976	867	1 337	204	—	659	160	514	5 174
Fine and special papers	—	—	5	—	88	134	78	—	—	305
Tissue paper	—	—	8	40	12	74	73	—	—	207
Commercial pulp	22	309	23	139	62	—	314	394	—	1 263
Kraft paper and paperboard	75	—	10	43	79	5	—	—	—	212
Paperboard	256	51	32	342	30	128	—	—	—	839
Subtotal	**810**	**1 336**	**945**	**1 901**	**475**	**341**	**1 124**	**554**	**514**	**8 000**
% by region	10.1	16.7	11.8	23.8	6.0	4.3	14.0	6.9	6.4	100.0
Building materials	—	—	48	88	—	73	—	—	—	209
Total Pulp and Paper	**810**	**1 336**	**993**	**1 989**	**475**	**414**	**1 124**	**554**	**514**	**8 209**
% by region	9.9	16.3	12.1	24.2	5.8	5.0	13.7	6.7	6.3	100.0

8 The Pulp and Paper Industry

8.2 Production

The Pulp and Paper Industry Sources of Supply for Wood Fibers *('000 m³)*

	1980	1981	1982	1983	%
Pulpwood harvested on public forest lands	6 684	8 425	4 566	6 341	28
Purchased wood	5 533	6 565	5 260	4 511	20
Sawmill residues (chips and others)	10 120	11 490	9 641	12 037	52
Total	**22 337**	**26 480**	**19 467**	**22 889**	**100**
Total in thousands of CUNITS*	(7 888)	(9 351)	6 875)	8 085)	

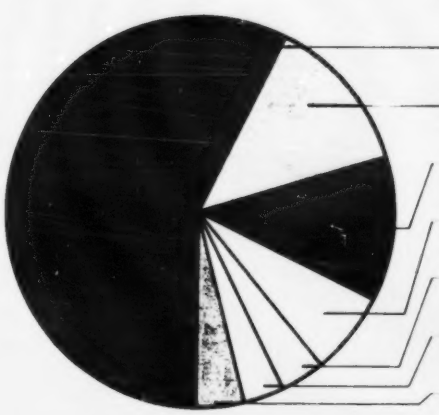
* CUNIT 100 solid cubic feet 2 831 cubic meters

Raw Materials Used in Pulp and Paper Mills

	Roundwood		Sawmills residues		Recycled paper		Total
	'000 t	%	'000 t	%	'000 t	%	'000 t
1979	5 305	59.0	3 396	37.8	290	3.2	8 991
1980	8 688	67.0	3 942	30.4	329	2.6	12 957
1981	6 244	53.5	5 065	43.4	370	3.1	11 679
1982(p)	4 449	48.1	4 416	47.7	391	4.2	9 256
1983(p)	4 205	45.0	4 723	50.0	459	5.0	9 387

(p) Provisory

Distribution of Production by Product



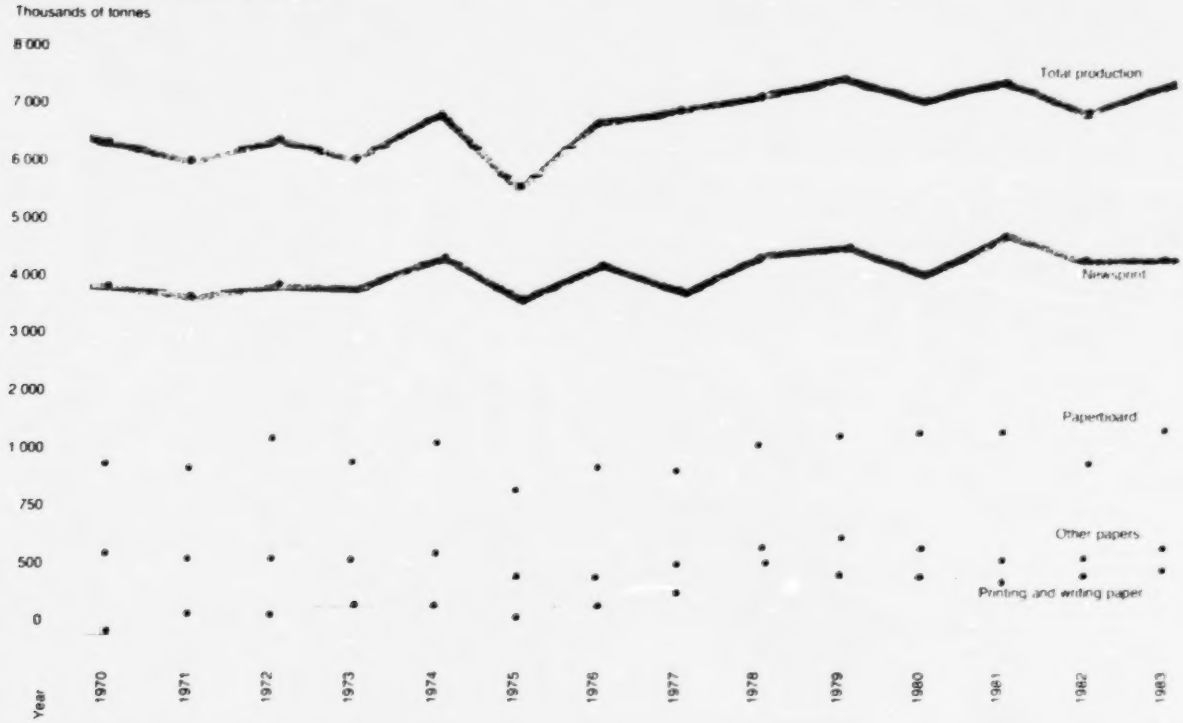
Production (%)		Product	Production (1000 t)	
1982	1983		1982	1983
62.0	59.4	Newsprint	4 107	4 160
11.2	11.8	Commercial pulp shipped outside Québec	741	829
13.5	14.8	Paperboard	895	1 033
6.4	6.8	Printing and writing paper	421	476
2.3	2.2	Sanitary paper	151	155
1.8	2.0	Wrapping and packaging paper	120	139
2.8	3.0	Other papers	185	210
100.0	100.0		6 620	7 002

Source: Association des industries forestières du Québec (A I F Q)

8 The Pulp and

8.2 Production (continued)

Evolution of Production



Source: Association des industries forestières du Québec (A I F Q)

Québec's Pulp Production *('000 t)*

	1980	1981	1982	1983	%
Mechanical pulp	3 272	3 584	3 361	2 428	55
Sulphite pulp	1 036	969	920	933	15
Sulphate pulp	1 680	1 785	1 452	1 656	27
Others	276	203	186	197	3
Total	**6 264**	**6 541**	**5 919**	**6 214**	**100**

Source: Association des industries forestieres du Québec (A I F Q)

8 The Pulp and Paper Industry

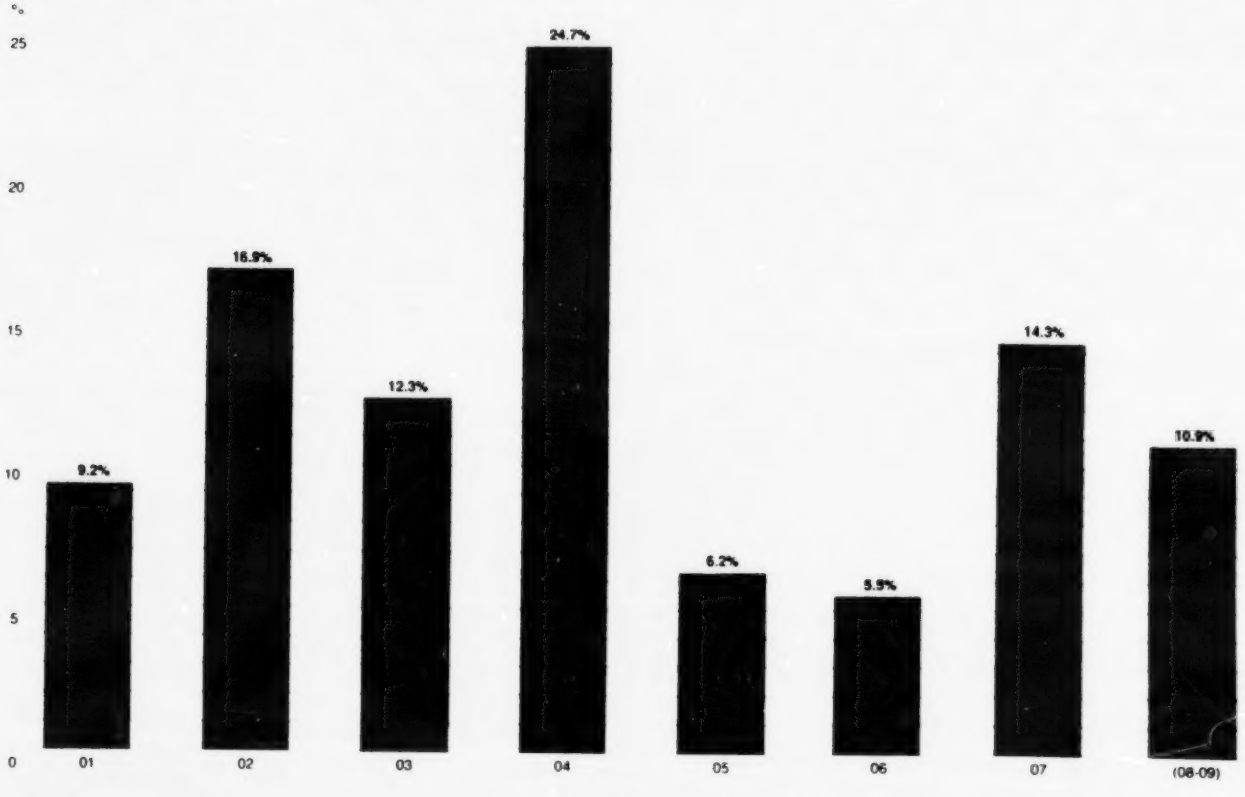
8.2 Production (continued)

Québec's Share in World Production of Paper and Paperboard

	Newsprint '000 t			Other papers and paperboard '000 t			Total '000 t		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
Québec	4 370	4 107	4 160	1 940	1 772	2 013	6 310	5 879	6 173
Canada	8 950	8 109	8 486	5 293	4 933	5 626	14 243	13 042	14 112
World	26 909	25 221	25 988	144 208	141 308	151 288	171 108	166 529	177 276
Québec/Canada	48.8%	50.6%	49.0%	36.7%	35.9%	35.8%	44.3%	45.1%	43.7%
Québec/World	16.2%	16.3%	16.0%	1.3%	1.3%	1.3%	3.7%	3.5%	3.5%

Sources: Association des industries forestières du Québec (A.I.F.Q.).
Association canadienne des producteurs de pâtes et papiers (A.C.P.P.P.).
Pulp and Paper International, Annual Review, 1984

Pulp and Paper Production by the M.E.R.'s Administrative Regions in 1982



8 The Pulp and Paper Industry

8.3 Economic Indicators

Evolution of Economic Indicators *(pulp and paper)*[1]

	Total number of employees	Wages '000 $	Value of shipments '000 $	Added value '000 $
1961	25 839	136 352	619 043	317 515
1962	25 736	140 873	646 431	329 920
1963	25 780	144 516	665 918	337 406
1964	26 867	155 067	734 510	368 394
1965	27 455	163 735	775 929	838 898
1966	28 771	186 800	868 284	421 479
1967	28 649	194 648	861 730	399 891
1968	28 259	206 900	891 228	398 736
1969	29 159	231 048	993 924	48 416
1970	31 430	268 195	1 039 972	475 499
1971	30 094	273 348	1 027 023	465 656
1972	29 478	294 567	1 099 041	505 362
1973	28 549	302 155	1 207 576	573 029
1974	31 988	386 283	1 843 949	947 710
1975	31 946	404 478	1 723 601	824 621
1976	32 981	513 653	1 950 128	887 614
1977	31 668	540 131	2 202 565	1 027 976
1978	31 810	595 620	2 651 184	1 266 995
1979	32 330	645 761	3 173 711	1 570 625
1980	31 421	686 250	3 549 160	1 765 768
1981	32 824	827 127	4 101 936	2 009 994
1982	31 404	864 478	3 862 473	1 744 370

* This category includes all employees whereas other statistics include only production workers.

(1) The pulp and paper industry represents only part of the activity of group 10: paper and allied industries.

Sources: 1961 to 1971 Adaptation of statistics from the B.S.Q.
1971 to 1982 Statistics Canada, catalogue 35-204

Pulp and Paper Mills Productivity

	1977	1978	1979	1980	1981	1982
Added value/ hour worked (in current dollars)	20.32	24.11	30.06	35.18	37.55	35.45
Sectorial productivity/total manufacturing productivity	1.31	1.38	1.51	1.54	1.47	1.34

Modernization Program Grants Paid *('000 000 $)*

	Québec	Federal	Total
Agreement 1979-1980			
1980-1981	7.7	7.6	15.3
1981-1982	16.2	21.6	37.8
1982-1983	7.9	11.5	19.4
1983-1984	20.0	20.0	40.0
1984-1985	32.8	42.2	75.0
1985-1986(p)	20.4	32.0	52.4
Total	**105.0**	**135.0**	**240.0**

(p) Preliminary data

Source: M.E.R., Direction de l'industrie des pâtes et papiers

Importance of Investments *('000 000 $)*

	1981	1982	1983(1)	1984(2)	Last five years
Investments in the pulp and paper and related industries	481	472	425	527	2 234
Total investments in Québec's manufacturing sector	2 272	2 160	2 035	2 882	11 288
Pulp and paper/total manufactured goods	21.2%	20.9%	18.3%	19.8%	19.8%

(1) Preliminary data

(2) Revised forecasts

Source: Association des industries forestières du Québec (A.I.F.Q.)

Value of Exports *('000 000 $)*

	1980	1981	1982	1983
Pulp and Paper Exports	2 386	2 784	2 680	2 545
Québec Total Exports	14 886	15 065	14 383	14 996
Relative Importance of Pulp and Paper	16.9%	18.5%	18.6%	17.0%

Source: Association des industries forestières du Québec (A.I.F.Q.)

8 The Pulp and Paper Industry

8.4 Shipments

Destination of Québec Pulp and Paper Shipments in 1983

	Québec		Other provinces		United States		Other countries		Total	
	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%
Newsprint	297	22.0	286	23.2	2 955	78.0	555	67.7	4 093	56.9
Commercial pulp	374	27.6	240	19.4	390	10.3	199	24.3	1 203	16.7
Paperboard and other papers	682	50.4	709	57.4	445	11.7	66	8.0	1 902	26.4
Total	**1 353**	**100.0**	**1 253**	**100.0**	**3 790**	**100.0**	**820**	**100.0**	**7 198**	**100.0**

* Including pulp shipped and reprocessed in Québec (374 000 m t)

Source Association des industries forestières du Québec (A I F Q)

Québec's share in the United States' Total Newsprint Consumption

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Québec Shipments ('000 t)	2 747	2 926	2 544	2 787	2 619	3 013	3 063	2 711	3 010	2 837	2 955
U.S. Consumption ('000 t)	9 400	9 329	8 395	8 719	9 280	9 877	10 199	10 088	10 164	10 108	10 589
Québec Shipments/ U.S. Consumption	29%	31%	30%	32%	28%	31%	30%	27%	30%	28%	28%

Sources Association des industries forestières du Québec (A I F Q).
Canadian Pulp and Paper Association (C P P A)

World Newsprint Production and Consumption in 1983 *('000 t)*

	Production	%	Imports	Exports	Apparent consumption
Québec	4 160	16.5	—	3 510	297*
Other provinces	4 325	17.2	—	3 960	718
United States	4 690	18.6	6 100	265	10 525
Scandinavia	3 364	13.3	5	2 809	560
Common Market	1 363	5.4	3 079	238	4 204
Other Western European countries	506	2.0	181	133	554
U.S.S.R.	1 380	5.4	13	320	1 073
Other Eastern European countries	395	1.6	230	47	578
Latin America	580	2.3	697	104	1 173
Asia, Africa and Oceania	5 442	17.7	1 473	364	5 551
World Total	**25 205**	**100.0**	**11 778**	**11 750**	**25 233**

(e) Estimate

Source Association des industries forestières du Québec (A I F Q)

9 The Forest Sector in Québec's Economy

9.1 Economic Indicators

Economic Indicators *(Forest Sector)*

	EMPLOYEES			WAGES ('000 $)			VALUE OF SHIPMENTS ('000 $)			ADDED VALUE ('000 $)		
	1980	1981	1982	1980	1981	1982	1980	1981	1982	1980	1981	1982
A. Logging	11 575	11 257	8 994	221 552	253 810	204 828	695 183	841 651	777 350	347 611	398 417	317 680
B. Wood Industry (Group 08)	29 213	27 976	23 608	428 664	443 934	393 913	1 691 882	1 828 164	1 582 630	754 954	807 715	642 886
C. Paper and Related Industries (Group 10)	43 556	45 011	43 144	889 051	1 058 959	1 107 687	4 846 927	5 546 214	5 393 093	2 105 572	2 432 782	2 176 011
D. Total Manufacturing Activity	527 925	525 843	482 337	8 827 000	9 843 572	9 915 886	50 068 186	55 449 978	54 293 105	19 175 706	21 199 474	19 520 069
E. Total Economic Activity	2 667 000	2 685 000	2 540 000	40 902 000	46 400 000	48 260 000	n.d.	n.d.	n.d.	70 139 000	80 189 000	83 129 000
Wood Industry/Total Manufacturing Activity (B/D)*	5.5%	5.3%	4.9%	4.9%	4.5%	4.0%	3.4%	3.3%	2.9%	3.9%	3.8%	3.3%
Paper and Related industries/Total Manufacturing Activity (C/D)*	8.3%	8.6%	8.9%	10.1%	10.8%	11.2%	9.7%	10.0%	9.9%	11.2%	11.5%	11.1%
Forest Sector/Total Economic Activity ((A + B + C)/E)*	3.2%	3.1%	3.0%	3.8%	3.7%	3.5%	—	—	—	4.6%	4.5%	3.8%
Manufacturing Activity/ Total Economic Activity (D/E)*	19.8%	19.6%	19.0%	21.6%	21.2%	20.5%	—	—	—	27.3%	26.4%	23.5%

* Relation between items above-mentionned

Sources: Statistics Canada, catalogue 25-202, 31-203
Bureau de la statistique du Québec, Situation économique au Québec 1983

Exports of Québec's Forest Products *(1983)*

Product	Value (M$)	Percentage of all forest products
Roundwood	13.9	0.4
Lumber (sawmill industry)	539.7	15.9
Products of other wood industries	222.1	6.6
Pulp and paper industry	2 560.8	75.6
Products of the paper processing industry	30.9	0.9
Waste paper and wood residues	19.1	0.6
Total forest products	**3 386.5**	**100.0**

Source: Canadian Forestry Service, Selected Forestry Statistics, Canada 1984 (E-X32)

Forest Product Exports Handled in Québec Major Ports 1983-1984 *(mt)*

Products	Ports									
	Montréal (Pv)		Québec (Pv)		Trois-Rivières (Pv)		Baie-Comeau (Pr · Fd)		Port-Alfred (Pr)	
	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
Logs	16 202	11 735	—	—	—	—	—	4 569	—	—
Timber	126 508	110 596	185 000	154 000	1 300	255	—	48 227	280	1 087
Chips	—	—	—	1 443(pr)	—	—	—	—	—	—
Veneer and plywood	12 893	24 110	—	—	227	45	—	—	—	—
Other wood products	5 129	4 654	—	—	4 600	221	—	—	—	—
Wood pulp	130 680	59 802	19 000	6 000	—	—	—	—	—	—
Newsprint	19 226	14 019	84 000	90 000	134 000	108 000	145 381	140 360	114 557	66 451
Other papers and cardboard	37 540	28 496	7 000	2 000	20 500	34 000	—	—	—	—
Total	**348 178**	**253 412**	**295 000**	**252 000 (253 443)**	**160 627**	**142 521**	**145 381**	**193 156**	**114 837**	**67 538**

Pv: Provincial ports
Pr: Private ports
Fd: Federal ports

Sources: Transport Canada
Ministère des Transports (Québec)

9 The Forest Sector in Québec's Economy

9.1 Economic Indicators (continued)

Forest Product Exports Handled in Québec Major Ports 1983-1984 *(mt) (continued)*

Products	Ports							
	Gros-Cacouna (Pr)		Chandler (Pr)		Matane (Fd)		Carleton (Fd)	
	1983	1984	1983	1984	1983	1984	1983	1984
Logs	—	—	—	—	19 695	122 243	—	—
Timber	93 861	—	—	—	9 674	14 049	27 939	11 829
Chips	41 934	29 774	—	—	2 133	21 899	—	—
Veneer and plywood	—	—	—	—	—	—	—	—
Other wood products	—	—	—	—	—	—	—	—
Wood pulp	—	—	—	—	—	—	—	—
Newsprint	—	—	49 157	64 637	—	—	—	—
Other papers and cardboard	—	—	—	—	—	—	—	—
Total	**135 795**	**29 774**	**49 157**	**64 637**	**31 502**	**48 191**	**27 939**	**11 829**

9 The Forest Sector In Québec's Economy

9.2 The M.E.R.'s Expenditures in, and Revenues from the Forest Sector

Gross Expenditures of the M.E.R.'s Forest Sector[1] *('000 $)*

Program[2]	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985(e)
1. Knowledge of the forest	**5 753**	**5 942**	**6 724**	**7 151**	**7 378**	**7 448**
a. Research	2 360	2 600	2 813	2 826	3 032	3 142
b. Basic inventory	3 393	3 342	3 911	4 325	4 346	4 306
2. Forest improvement	**27 567**	**32 711**	**39 675**	**51 500**	**67 581**	**91 389**
a. Public forests	16 158	18 934	24 338	31 846	46 205	70 534
b. Private forests	11 409	13 777	15 337	19 654	21 376	20 855
3. Forest protection against	**15 258**	**16 913**	**22 837**	**29 258**	**38 154**	**31 168**
a. Fires	8 521	10 296	13 092	13 512	18 964	10 960
b. Insects and diseases	4 958	4 360	7 421	12 958	16 969	17 858
c. Education	1 779	2 257	2 324	2 788	2 221	2 350
4. Utilization of forests	**36 326**	**33 970**	**38 047**	**37 061**	**34 747**	**34 142**
a. Planning	8 636	8 038	8 209	11 991	9 349	8 708
b. Control	7 018	7 970	9 127	8 974	8 965	9 100
c. Forest roads	20 672	17 962	20 711	16 096	16 433	16 334
5. Internal management and support[3]	**16 640**	**9 812**	**11 832**	**13 712**	**13 337**	**21 122**
6. Forestry financing	**2 124**	**2 368**	**3 520**	**3 499**	**3 218**	**3 830**
7. Development of the forest industry	**1 289**	**19 310**	**48 001**	**18 989**	**26 511**	**45 346**
The M.E.R.s total expenditures in the forest sector	**104 957**	**121 026**	**170 636**	**161 170**	**190 926**	**234 445**
Total expenditures of the economic mission ('000 $)	**1 803 705**	**2 018 410**	**2 213 286**	**2 414 176**	**2 700 097**(e)	**—**
Forest sector/economic mission	**5.8%**	**6.0%**	**7.7%**	**6.7%**	**7.1%**	**—**

(e) Estimate

(1) Excluding expenditures of the regional development fund.

(2) Historical data are distributed according to the current budgetary system.

(3) The forest sector's share of the Ministry's total internal management and support expenditures

9 The Forest Sector in Québec's Economy

9.2 The M.E.R.'s Expenditures in, and Revenues from the Forest Sector (continued)

Revenues of the M.E.R.'s Forest Sector *('000 $)*

	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985
Dues on authorized logging operations						
— Leased territories (timber limits)	16 236	10 026	22 395	10 269	13 888	24 200
— Domanial forests	12 047	10 186	12 599	11 583	12 961	20 000
— Other tenures	1 912	2 428	1 981	429	416	1 000
Dues on surplus volumes						
— Leased territories (timber limits)	*	*	16	—	5	10
— Domanial forests	*	*	34	13	4	10
— Other tenures	*	*	106	(38)	32	—
Wood scaler permits	5	5	4	3	(3)	5
Export permits	37	6	11	10	—	5
Wood sales	177	187	128	187	279	170
Rental of air tankers	340	622	1 243	799	2 337	—
Rental of leased territories (timber limits)	1 442	1 296	2 432	3 185	1 860	2 500
Rental of maple tree groves	20	23	30	34	31	25
Fire prevention services	1 073	1 138	1 718	1 511	357	2
Forest fires extinction	587	491	538	538	104	—
Services related to the prevention of, and fight against harmful insects and tree diseases	636	486	1 117	622	1 493	1 400
Wood scaling services	104	49	49	39	17	25
Construction of forest roads	7 198	162	(1)	—	—	1
Forest inventories and management	583	810	1 033	907	1 260	1 200
Interest on the payment of forest dues	574	753	1 399	1 302	1 573	1 400
Fines and confiscations	1 734	(453)	999	236	204	270
	44 705	28 215	47 831	31 633	36 818	52 223

(e) Estimate for the last month of the year.
* Included in dues on authorized logging operations.

Conversion Factors

1 cord of wood = 85 solid cubit feet = 2.40 cubic meters
1 cunit = 100 solid cubic feet = 2.831 cubic meters
1 000 board feet measure (b.f.m.) = 2.36 cubic meters (net value)
1 cubic meter = 423.7 b.f.m. 35.5 cubic feet 0.353 cunits
1 metric tonne = 1 000 kilograms = 1.102 short ton = 2.205 pounds
1 square kilometer = 0.386 square mile

Sale Prices Index for the Québec Softwood Industry

Year		Index	Year		Index
1971	(ann. av.)	100.0	1979		262.3
1972		108.4	1980		286.1
1973		122.9	1981		309.8
1974		154.5	1982		311.8
1975		180.9	1983		306.8
1976		186.8	1984	(Nov. 1)	345.6
1977		199.6	1985	(July 1)*	357.9
1978		218.9			

N.B. These figures are the results of a weighting based on shipments value and sale prices index for pulp and paper mills and on the index for sawmills and planning mills. This latter index is weighted according to the volumes of spruce and jack pine harvested by this industry.

Statistics Canada, catalogue 62-011.

* Estimate based on the chronological series average.

Gouvernement du Québec
Ministère de l'Énergie
et des Ressources